

Illinois State University ISU ReD: Research and eData

Theses and Dissertations

7-3-2016

Assessing Self-Authorship Among Athletic Training Students

Jeffrey G. Williams

Illinois State University, jgwilli@ilstu.edu

Follow this and additional works at: <https://ir.library.illinoisstate.edu/etd>



Part of the [Higher Education Administration Commons](#)

Recommended Citation

Williams, Jeffrey G., "Assessing Self-Authorship Among Athletic Training Students" (2016). *Theses and Dissertations*. 641.
<https://ir.library.illinoisstate.edu/etd/641>

This Thesis and Dissertation is brought to you for free and open access by ISU ReD: Research and eData. It has been accepted for inclusion in Theses and Dissertations by an authorized administrator of ISU ReD: Research and eData. For more information, please contact ISUReD@ilstu.edu.

ASSESSING SELF-AUTHORSHIP AMONG ATHLETIC TRAINING STUDENTS

Jeffrey G. Williams

196 Pages

The purpose of this study was to examine the nature and development of self-authorship among athletic training students. A cross-sectional, survey design was used and students enrolled in Commission on Accreditation of Athletic Training Education (CAATE) accredited professional athletic training degree programs were included as participants. Systematic sampling was used to recruit participants from the target population. Participants were recruited through batch email addresses of non-certified student members of the National Athletic Trainers' Association (NATA) membership database.

The quantitative measure of self-authorship described by Creamer, Baxter Magolda, and Yue (2010), referred to as the Career Decision Making Survey-Self Authorship (CDMS-SA), was used. The CDMS-SA instrument was transcribed into web-based survey software and disseminated to participants through email. Data from the CDMS-SA instrument was analyzed using quantitative statistical analysis procedures including factor analysis, reliability analysis, descriptive statistics, analysis of variance (ANOVA), and regression. Findings showed weak construct validity and internal

consistency (reliability) when attempting to assess self-authorship and its phases and dimensions among a sample of athletic training students. Future research should continue working toward better understanding and measuring self-authorship.

Advancement in these areas could refine and establish valid and reliable measures for researchers and practitioners to assess self-authorship among study participants.

KEYWORDS: Athletic Training Education, Meaning Making, Self-Authorship

ASSESSING SELF-AUTHORSHIP AMONG
ATHLETIC TRAINING STUDENTS

JEFFREY G. WILLIAMS

A Dissertation Submitted in Partial
Fulfillment of the Requirements
for the Degree of

DOCTOR OF PHILOSOPHY

Department of Educational Administration and Foundations

ILLINOIS STATE UNIVERSITY

2016

© 2016 Jeffrey G. Williams

ASSESSING SELF-AUTHORSHIP AMONG
ATHLETIC TRAINING STUDENTS

JEFFREY G. WILLIAMS

COMMITTEE MEMBERS:

Wendy Troxel, Chair

Phyllis McCluskey-Titus

John Rugutt

ACKNOWLEDGMENTS

I wish to thank my Savior Jesus Christ, my Meghan, my Mom, and my Committee for being great company on this journey.

J. G. W.

CONTENTS

	Page
ACKNOWLEDGMENTS	i
CONTENTS	ii
TABLES	vii
CHAPTER	
I. THE PROBLEM AND ITS BACKGROUND	1
Overview	1
Statement of the Problem	2
Purpose and Scope	4
Research Questions	5
Theoretical Framework	6
Significance of the Study	7
Important Terms	9
Description of Study Variables	9
Conceptual Definitions	9
Self-authorship	9
Dimensions of self-authorship	10
Phases of self-authorship	10
Following external formulas	10
The crossroads	11
Becoming author of one's life	11
Internal foundation	11
Operational Definitions	12
Self-authorship	12
Dimensions of self-authorship	12
Phases of self-authorship	12
Summary	13

II. REVIEW OF RELATED LITERATURE	14
Introduction	14
Statement of the Problem	15
The Profession of Athletic Training	17
History	19
Educational Evolution	22
Three Levels of Accreditation	24
Content, Curriculum, and Expectations	27
Ways of Viewing Clinical Experiences in Colleges and Universities	30
Educational Theory Informing Athletic Training Education	33
Learning Over Time	34
Professional Socialization	37
Socialization in allied health	38
Socialization in athletic training	40
Self-Authorship	45
The dimensions of self-authorship	45
Intrapersonal dimension	45
Interpersonal dimension	46
Epistemological (cognitive) dimension	46
The phases of self-authorship	47
Following external formulas	47
The crossroads	48
Becoming author of one's life	48
Internal foundation	49
Theoretical origin	49
Theoretical assumptions	50
The meaning-making process	50
Constructivism	51
Developmentalism	52
Development of Self-Authorship	53
Curricular and pedagogical considerations	55

Validating student as a knower	56
Situating learning in the student's own experience	57
Learning as mutually constructing meaning	57
Implications for clinical learning	59
Self-authorship development in various populations	61
Ethnicity	63
Gender	67
Student risk-profile	68
Summary	71
Significance and Relevancy of Self-Authorship in Athletic Training	72
Systematic Approach to Issues in the Field	72
Turnover	72
Professional identity, commitment, and patient care	74
Advancing Educational Priorities	76
Common priorities for 21 st century education	76
Priorities of athletic training education	77
Threats and Opportunities Surrounding the Study of Self-Authorship	79
Challenges	79
Opportunities	81
Assessment methods	82
Measures	85
Validity and reliability of the instrument	85
Summary	88
III. RESEARCH DESIGN	89
Overview	89
Research Design	92
Population and Sampling Procedures	92
Instrumentation	93
Measures	93
Validity and Reliability of the Instrument	94

Procedures	95
Data Analysis	96
Research Questions	96
Internal and External Validity	100
Internal Validity	100
External Validity	103
Summary	105
IV. SUMMARY OF RESULTS	106
Introduction	106
Participant Profile	106
Research Question 1	108
Factor Analysis: The Phases of Self-Authorship	110
Reliability Analysis: The Phases of Self-Authorship	118
Factor Analysis: The Dimensions of Self-Authorship	119
Reliability Analysis: The Dimensions of Self-Authorship	123
Research Question 2	124
Research Question 3	127
Tolerance Statistic	128
Model Summary	129
Model summary of the phases	129
Model summary of the dimensions	129
Analysis of Variance	130
Summary	131
V. SUMMARY, DISCUSSION, LIMITATIONS, AND RECOMMENDATIONS	132
Introduction	132
Purpose and Scope of the Study	132
Design and Methodology of the Study	133
Discussion of the Findings	134
Research Question 1	134
The instrument's validity	134
The instrument's reliability	140

Consideration of subject characteristics	143
Summary	144
Research Question 2	145
Summary	148
Research Question 3	149
Tolerance statistic	150
Model summary	151
Model summary of the phases	151
Model summary of the dimensions	151
Analysis of variance	152
Age	155
Gender	155
Race	157
Student risk-profile	161
Summary	165
Self-Authorship in Athletic Training	165
Systemic Approach to Issues in the Field	165
Limitations	171
Recommendations for Future Research	174
Conclusion	176
REFERENCES	178
APPENDIX A: Student Recruitment Letter/Email	185
APPENDIX B: Student Recruitment Letter/Email (Follow-Up)	186
APPENDIX C: Program Director Recruitment Letter/Email	187
APPENDIX D: Program Director Recruitment Letter/Email (Follow-Up)	188
APPENDIX E: Career Decision Making Survey-Self-Authorship (CDMS-SA) Instrument (Creamer et al., 2010)	189
APPENDIX F: Approval for Access to Batch NATA Member Emails	194

TABLES

Table	Page
1. Summary of Research Questions and Statistical Analyses	100
2. Selected Demographic Characteristics	107
3. Selected Educational and Work Characteristics	109
4. Total Variance Explained for Three-Factor Solution	111
5. Commonalities for Three-Factor Solution	112
6. Career Decision Making Survey—Self-Authorship (CDMS-SA)	114
7. Factor Loadings for Rotated Components ^a	117
8. Reliability Coefficients of the CDMS-SA's Measurement of Self-Authorship in its Entirety and CDMS-SA Item Scales Measuring the Phases of Self-Authorship	119
9. Reliability Coefficients of CDMS-SA Item Scales Originally Intended to Measure the Dimensions of Self-Authorship	124
10. Descriptive Statistics of Responses to CDMS-SA Questionnaire Items	126
11. Mean Scores of Responses to CSMS-SA Items Representing the Phases of Self-Authorship	126

CHAPTER I

THE PROBLEM AND ITS BACKGROUND

Overview

In their journey through college, students are expected to develop in various ways. Acquisition of knowledge, learning how to analyze knowledge, and discerning what knowledge to believe, for example, are complex meaning-making capacities expected to be cultivated during the collegiate journey. Moreover, a college student is expected to develop an intrapersonal identity, interpersonal identity and his or her core beliefs, values, and affections. Using his or her complex meaning-making capacity to inform construction and reconstruction of his or her identity enables the student to engage in mutual relationships in various contexts throughout adult life. It is this foundation of meaning-making and an internally defined sense of self that is *self-authorship* and serves as scaffolding for the student's holistic development and collaborative existence with others through life (Baxter Magolda, 2001b).

This way of modeling the journey of development through college is rooted in the research of Dr. Marcia Baxter Magolda. Beginning her work in 1986, Baxter Magolda followed 39 young adults' development from age 18 until their early thirties. Her aim was to better understand the students' learning and intellectual development (Baxter Magolda, 1992). It is through the qualitative data gleaned from Baxter Magolda's research that students' developmental tendencies on their journeys toward self-authorship are documented.

Understanding the tendencies of *how* students journey toward self-authorship is crucial for educators (college faculty and student affairs professionals), as it is the first step to educators becoming “good company” or agents in the collegiate process who effectively facilitate students’ advancement toward self-authorship (Baxter Magolda, 1992).

As self-authorship has such importance in a student’s ability to achieve learning outcomes of the collegiate experience and navigate the complexities of life, this study aims to contribute to the body of knowledge surrounding self-authorship. The ensuing sections will provide an introduction to my research focused on this matter. I begin by developing a problem statement, which will lead to stating my research purpose. I will then discuss the research questions and theoretical framework guiding the study. Next, I will discuss evidence demonstrating the significance of focusing research toward self-authorship in the field of athletic training, and define important variables and terminology for readers.

Statement of the Problem

Unfortunately, scholars of teaching and learning contend there to be inadequate levels of meaning making and self-authorship among college students. Students, instead, tend to organize their internal meaning systems according to the beliefs and values of external authorities (Kegan, 1994; King & Kitchener, 1994; Baxter Magolda, 1992). Without meaning-making capacity though, such as self-authorship, learners are left struggling to achieve dynamic and complex goals of school and life (Baxter Magolda & King, 2012). Moreover, in order to achieve dynamic outcomes, learners must have or be facilitated in developing these meaning making capacities. Hence, curricular planning,

teaching, and assessment practices within higher education should focus on student outcomes including—thinking in complex ways on a range of issues, gaining intercultural competence, and developing discernment. Achievement of such outcomes enable a learner to successfully navigate the intricacies of life and work. Educators, then, cannot afford to forego development, assessment, and documentation of meaning-making capacities such as *self-authorship* among students.

While self-authorship is an important construct for all learners, it is especially necessary for individuals preparing to become healthcare providers. Just as social issues like poverty, appreciating diversity, and crime demand advanced, self-authored thoughts and behaviors in response to the issues (Baxter Magolda, 1999), so too does optimal practice in healthcare occupations. In healthcare for example, professionals necessitate integrating cognitive, intrapersonal, and interpersonal dimensions to deliver holistic care to human patients, not just broken bodies.

It becomes apparent, then, that in professions such as athletic training, accrediting agencies seek to ensure proper development of cognitive, psychomotor, and affective skills of future practitioners. The Commission on Accreditation of Athletic Training Education (CAATE) notes for example, “Clinical education must provide students with authentic, real-time opportunities to practice and integrate athletic training knowledge, skills, and clinical abilities, including decision-making and professional behaviors required of the profession in order to develop proficiency as an Athletic Trainer” (p. 7). Thus, as the CAATE’s objective of clinical education aligns closely to the nuances of self-authorship, self-authorship can serve as a conceptual framework for practicing and advancing clinical education in healthcare disciplines such as athletic training.

Educational topics such as learning over time (Amato, Konin, & Brader, 2002; Feiman-Nemser, 2001), professional socialization of athletic training students (Dodge, Mitchell, & Mensch, 2009; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012; Pitney, Ilsley, & Rintala, 2002; Pitney, 2002), and student learning styles (Draper, 1989; Harrelson, Leaver-Dunn, & Wright, 1998; Stradley et al., 2002; Thon & Hansen, 2015) are well established in the athletic training education discourse. These previous paradigms of viewing athletic training student development have fueled enhancement of professional education in the field and facilitated continuous improvement of students' transitions to practice. While current and previous educational topics inform professional education of athletic trainers, the field's body of knowledge lacks interpretation of athletic training student development through the lens of constructive-developmental phenomena such as self-authorship.

Purpose and Scope

The aim of this study was to be a foundational contribution to athletic training educational research through examining athletic training students' development of meaning-making capacity and self-authorship. Knowledge and practices gleaned from such research align with strategic priorities of athletic training education, described by the National Athletic Trainers' Association Executive Committee for Education (ECE), as they continue enhancement of professional education of athletic trainers (Strategic Priority 1) and facilitate students' successful transition to practice (Strategic Priority 2). As noted previously, an individual who has successfully self-authored will demonstrate advanced, internal foundations for cognitive appraisal and behavioral enactment of intrapersonal identity, interpersonal identity, and metacognitive capacity (Baxter

Magolda, 1999), each of which are imperative for the student to optimally navigate the complexities of healthcare practice.

Self-authorship is important among athletic training students and practitioners, then, as it is a constructive-developmental meaning-making process in which the individual successfully and meaningfully integrates classroom knowledge, skills, and clinical abilities. Moreover, the self-authored athletic trainer effectively enacts clinical discernment and professional behaviors required of the profession in order to deliver humanistic healthcare of the highest order.

Therefore, the purpose of this study was to advance the theoretical and practical understanding of self-authorship in athletic training (AT) education and empirically determine the extent to which the first three developmental phases (e.g. external formulas, crossroads, and becoming author) of self-authorship are represented among athletic training students.

Research Questions

This study was guided by the following research questions.

1. What is the relationship (or “level of agreement” (Creamer et al., p. 557, 2010)) between the cluster of survey items intended to measure the dimensions and those intended to measure the phases of self-authorship among a sample of athletic training students?
 - a. Do the results of the study of athletic training students support Creamer’s factor structure of the dimensions of self-authorship?
 - b. Do the results of the study of athletic training students support Creamer’s factor structure of the phases of self-authorship?

2. To what extent are the three developmental phases (e.g., external formulas, crossroads, and becoming author) of self-authorship represented among athletic training students?
3. Do differences exist in the developmental phases (e.g., external formulas, crossroads, and becoming author) and dimensions (e.g., intrapersonal, interpersonal, and epistemological) of self-authorship among independent variables (gender, ethnicity, and student risk-profile)?

Theoretical Framework

Self-authorship is characterized as a developmental process whereby external influences and experiences are internally coordinated and relativized (Baxter Magolda, 1999). Internal coordination of external experiences leads the learner to assemble his or her foundational affections including his or her beliefs, intrapersonal identity, interpersonal identity, and metacognitive abilities. These developments, along with the learner's newly developed capacity to engage in ongoing meaning making serve as the basis for meeting complex demands of school, life, and work (Baxter Magolda, 1999).

The process of self-authorship requires more than simply organizing life experiences. It requires advanced cognitive appraisal and behavioral enactment of who one is (e.g. intrapersonal identity), who one is in relation to others (e.g. interpersonal identity), and how meaning is being constructed (e.g. metacognition) (Baxter Magolda, 1999). As these aforementioned components are closely intertwined, the construct of self-authorship becomes a complicated phenomenon. An individual, for example, may learn and experience many things (i.e. intellectually) while attending college. This person may even successfully organize course content and information from a learning

experience into an assessment measure. The person [student], however, may fail to construct and contextualize the learned information into the world he or she has, is, and anticipates experiencing. Thus, self-authoring is a process where accurate uptake of information, association (i.e. contextualization) of information, and engagement in appropriate and informed behavior occur simultaneously. The person, then, is drawing from his or her internal belief system and external influences to continuously make, remake, and regulate thoughts and actions (Baxter Magolda, 1999).

Significance of the Study

Because the body of knowledge within athletic training education lacks interpretation of student development through the lens of phenomena such as self-authorship, aiming research toward investigating it offers an unexplored intervention—one that may also inform even non-educational issues in the field. Moreover, as the dimensions of self-authorship provide the base from which students achieve general and discipline specific learning outcomes, the constructive-developmental meaning-making process of self-authorship should become an educational outcome sought and assessed by athletic training educators. Specifically, I posit that athletic training students who have successfully progressed in their journeys toward self-authorship become most able to integrate classroom knowledge, skills, and clinical abilities. I contend, too, that self-authored athletic training students have more understanding of their career intentions and professional commitment. Moreover, the self-authored athletic training student, and later practitioner, effectively enact clinical discernment and professional behaviors required of the profession in order to deliver the highest order of humanistic healthcare.

As such, advancing understanding and application of self-authorship will move athletic training educators toward better achieving common learning outcomes desired throughout higher education. Organizations such as the Association of American Colleges and Universities, for example, support a common goal among all students is to not only gain discipline-specific skills for twenty-first century occupations, but be capable of navigating the complexities, diversities, and changes associated with the real world (Association of American Colleges & Universities, 2015). Moreover, Priorities 1 and 2 of athletic training education's "Strategic Priorities" provide schemas about which research directed toward meaning making and self-authorship can be situated. Gaining understanding and improved application of pedagogical practices, then, would support enhancement of professional education and students' preparation for workforce entry.

In order for athletic training educators to best understand, promote, and assess self-authorship, future research must be oriented toward it. The field of athletic training has economic and humanitarian interests as it must promote professional commitment among its professionals, limit systemic turnover stimulating factors throughout the field, develop inter-professional rapport in the healthcare community, and continually improve patient-care. Therefore, stake- and share-holders of athletic training will benefit from research aimed toward advancing understanding and practices to facilitate development of meaning-making capacities and self-authorship.

In summary, it is clear that directing research efforts toward self-authorship among athletic training students and developing ways to promote and assess such an outcome among students is a relevant and worthy endeavor. The discussion will move now to discussing important terms necessary for readers to best understand this research.

Following a discussion of important terms, the section will describe the variables to be used in the study. This section will provide conceptual and operational descriptions of the variables to be studied.

Important Terms

Formal recognition of these terms, which are used throughout the study, is necessary for mutual understanding between me and readers of this study.

The term *self-authorship* is defined as a developmental process whereby one moves toward an “ability to define [their] own beliefs, identity, and relationships” (Baxter Magolda, 2004, p. xvii).

The term *meaning-making* is defined as an individual’s habit of mind that acts as an “interpretive filter” for understanding the experiences of one’s self and others.

Applied to college students, meaning-making “refers to the strategies students use to understand what and how they are learning” (Baxter Magolda, 2012, p. 4). Meaning making can, furthermore, be interpreted as:

[a] way of making sense of the world, such as figuring out what to believe, who to be, and how to act: it provides a guide for determining what to pay attention to, whose advice to listen to, what can be gleaned from a positive or negative experience, and in general how to navigate complex environments, including college campuses. (Baxter Magolda, 2012, p. 4)

Description of Study Variables

Conceptual Definitions

Self-authorship. The construct of self-authorship is defined as a developmental process whereby one moves toward an “ability to define [their] own beliefs, identity, and relationships” (Baxter Magolda, 2004, p. xvii).

Dimensions of self-authorship. The construct of self-authorship is comprised of three dimensions. The intrapersonal dimension is represented by an individual's consciousness of *self*. The interpersonal dimension is represented by an individual's understanding of the mutual, interdependence of relationships with others. The cognitive, sometimes referred to as epistemological, dimension is represented by an individual's "epistemic assumptions about the nature, limits, and certainty of knowledge" (Creamer et al., 2010, p. 550).

Phases of self-authorship. The construct of self-authorship is evolutionary by nature as individuals tend to journey (e.g., progress or regress) through its phases. Baxter Magolda (1992) described four consistently emerging phases in the process: (a) following external formulas, (b) the crossroads, (c) becoming the author of one's life, and (d) internal foundation. Generally, the phases evolve from a reliance on external authority's prescription of knowledge and identity to an internally constructed self-definition. The next several paragraphs will provide expanded commentary on the phases of self-authorship.

Following external formulas. Early in the self-authorship journey, individuals tend to rely on *external formulas* to inform their views of knowledge (epistemological dimension), sense of self (intrapersonal dimension), and relationship to others (interpersonal dimension). In this phase, an individual's affections have origins in and are prescribed by external authorities—family members and sociocultural narratives, for example. Instead of engaging in complex meaning-making and self-authorship, individuals in this phase uncritically accept meaning and ways of knowing. Moreover, individuals in this phase enact intra- and interpersonal identities aimed at gaining others'

approval and satisfying others' expectations.

The crossroads. Although there exist innumerable journeys preceding this phase, there tends to be commonality in the general etiology and manifestation of one coming to the *crossroads* (Baxter Magolda, 2001). Typically, the crossroads occurs after a realization that reliance on external formulas has insufficient or unfulfilling results. Dissatisfaction with externally constructed ways of knowing charges the individual with a newly found awareness of the necessity for internal construction of *who one is*, *who one is in relation to others*, and *the origin of knowledge*. The crossroads, then, is an essential point in the journey to self-authorship as it initiates the shift from succumbing to external formulas to constructing, internalizing, and accepting an internal voice.

Becoming author of one's life. Following development of one's own voice during the crossroads phase, the individual begins to employ that voice, or internally defined self, to construct (i.e., author) new epistemic assumptions (cognitive dimension), intrapersonal identity, and interpersonal identity (Baxter Magolda, 2001). This marks the beginning of the *becoming author of one's life* phase.

In this phase, important changes occur including acknowledgement of the uncertainty of knowledge, critical appraisal of experiences and information, and enactment of internally defined beliefs in personal and professional contexts. Such meaningful changes inevitably lead to an even further emergence of one's sense of self and renegotiation of previously existing understandings and relationships (Baxter Magolda, 2001).

Internal foundation. Development through the earlier phases stimulates continual authoring of the dimensions throughout the lifespan. The internally defined

frameworks developed and used in the earlier phases, then, act as lifelong scaffolding by which the individual will continue using in his or her appraisal and answering of questions regarding his or her intrapersonal identity, interpersonal identity, and epistemic assumptions (Baxter Magolda, 2001). In essence, the complex meaning-making capacity of self-authorship becomes solidified as the *internal foundation*—upon which the complexities of life, work, and school, for example, are navigated.

Operational Definitions

Self-authorship. Self-authorship, defined operationally for the purposes of this study, is a summation of participants' responses to items within the CDMS-SA (Creamer, et al., 2010) instrument. Item responses cumulate to form an individual participant's or a group total Self-Authorship Summary Score. The summary score indicates an individual or a group's position within the phases and dimensions of the self-authorship construct.

Dimensions of self-authorship. The three dimensions (e.g., intrapersonal, interpersonal, and cognitive) of self-authorship are operationally defined as the summation of an individual or group responses to items designed to measure the three different dimensions.

Phases of self-authorship. Although there are, conceptually, four phases of the self-authorship construct (Baxter Magolda 1992), the CDMS-SA instrument has been validated to only measure the first three phases—external formulas (EF), crossroads (CrR), and becoming author (BA) (Creamer et al., 2010). As such, these three phases (e.g., external formulas, crossroads, and becoming author) of self-authorship are operationally defined as the summation of an individual or group mean of responses to items designed to measure the three different phases.

Summary

This chapter has served to introduce my research. It has specifically worked to reveal the research problem, research purpose, and significance of the study, important terms, and descriptions of study variables.

To echo previous statements, achievement of self-authorship has great influence on students' abilities to achieve 21st century learning outcomes and successfully navigate the innumerable complexities of school, life, and work. While it may not be appropriate to speak on behalf of all educators (i.e., faculty and student affairs professionals) throughout higher education, I contend that achievement of self-authorship is a desirable developmental outcome of students across institutional types and academic disciplines.

With that, the following literature review chapter provides the definition and scope of aiming research toward self-authorship in higher education and in athletic training educational research. Moreover, the literature review chapter shares, reviews, and analyzes other literature surrounding self-authorship. By doing so, the purpose of my research will be situated within the larger, ongoing discourse of self-authorship and athletic training research. The literature review chapter established the importance for my study to be called into existence.

Following the literature review chapter, a chapter aimed at explaining my research methods is provided. This chapter includes a detailed, comprehensive plan for my research including the research design, population and sampling procedures, and instrumentation. Elements such as procedures, data analyses, and a discussion of internal and external validity are also included in the third chapter (i.e., methods).

CHAPTER II

REVIEW OF RELATED LITERATURE

Introduction

The secret of the care of the patient is in caring for the patient.
—Francis Weld Peabody (1927)

Students are expected to achieve various goals as they journey through the collegiate experience. A 21st century higher education, for example, should evoke learning goals such as knowledge acquisition, learning how to analyze knowledge, discerning what knowledge to believe, and an ability to transform knowledge into judgment and action (Baxter Magolda & King, 2004). Additionally, students should develop capacity to appreciate diversity, multiple perspectives, difference, and the interdependency of relationships (Baxter Magolda & King, 2004). In order to achieve such goals, students and faculty must mutually engage in a transformative learning endeavor causing both to move from naïveté, through skepticism, to commitment (Daloz, Keen, Keen, & Parks, 1996).

It is the multidimensional and evolutionary construct of self-authorship, then, which serves as a developmental learning outcome capturing the complexity of the aforementioned goals of a college education. Thus, it is argued that a college education must not only focus on skill acquisition necessary for job performance. Rather, it should be a transformative process leading the student on a journey toward self-authorship and enabling him or her to meet the innumerable complexities of adult life.

With that, this chapter critically reviews and appraises relevant literature regarding the construct of self-authorship. Ultimately, the sections of this chapter work to bring together existing knowledge surrounding the topics of athletic training education, the practice of athletic training, self-authorship, and assessment of self-authorship. In doing so, the foundation will be laid about which the subsequent study will be based.

The first section provides a problem statement and brief rationale for directing research efforts toward this topic. The next section provides the reader with an understanding of the history, nature, and nuances of the burgeoning healthcare profession of athletic training and the evolution of educational preparation of athletic trainers. The third section provides an in-depth review and analysis of the self-authorship construct including its theoretical origins, dimensions, phases, and development. Furthermore, self-authorship development is explored in numerous contexts including implications for curriculum and pedagogy, clinical learning, and developmental differences among various student populations. A fourth section provides a more detailed analysis of the significance and relevancy of researching self-authorship both generally and for the field of athletic training. This chapter ends with a fifth section detailing challenges and opportunities for assessing self-authorship.

Statement of the Problem

Scholars of teaching and learning contend there to be inadequate levels of meaning making and self-authorship among college students. Students, instead, tend to organize their internal meaning systems according to the beliefs and values prescribed by external authorities (Baxter Magolda, 1992; Kegan, 1994; King & Kitchener, 1994). Without meaning-making capacity such as self-authorship, though, learners are left

inadequately equipped to achieve the dynamic and multifaceted goals of school and life (Baxter Magolda & King, 2012). Moreover, in order for students to achieve dynamic outcomes of 21st century higher education, educational practitioners must be prepared and able to facilitate development of meaning-making capacities among students.

While self-authorship is an important construct for all learners, it is especially necessary for individuals preparing to become healthcare providers. Optimal practice in healthcare occupations necessitates advanced integration of cognitive, intrapersonal, and interpersonal dimensions (e.g., the dimensions of the self-authorship construct) to deliver holistic care to human patients. Moreover, in order to enact these dimensions, the individual must move through the phases of self-authorship where he or she initially relies on external formulas and authorities to discern his or her thoughts and actions, toward internally constructed, self-authored affections and behaviors. Thus, just as self-authorship serves as a developmental learning outcome capturing learners' achievements of the complex goals of a college education, it captures desirable characteristics of clinically competent, yet humanistic healthcare providers.

It becomes apparent, then, that in professions such as athletic training, accrediting agencies seek to ensure proper development of cognitive, psychomotor, and affective skills of future practitioners. The Commission on Accreditation of Athletic Training Education (CAATE) notes, for example, "Clinical education must provide students with authentic, real-time opportunities to practice and integrate athletic training knowledge, skills, and clinical abilities, including decision-making and professional behaviors required of the profession in order to develop proficiency as an Athletic Trainer" (Commission on Accreditation of Athletic Training Education, 2012, p. 7). Thus, self-

authorship can serve as a conceptual framework for practicing and advancing clinical education in healthcare disciplines such as athletic training.

Educational topics such as learning over time (Amato, Konin, & Brader, 2002; Feiman-Nemser, 2001), professional socialization of athletic training students (Dodge, Mitchell, & Mensch, 2009; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012; Pitney, Ilsley, & Rintala, 2002; Pitney, 2002), and student learning styles (Draper, 1989; Harrelson, Leaver-Dunn, & Wright, 1998; Stradley et al., 2002; Thon & Hansen, 2015) are well established in the athletic training education discourse. These previous paradigms of viewing athletic training student development have fueled enhancement of professional education in the field and facilitated continuous improvement of students' transitions to practice. However, while current and previous educational topics inform professional education of athletic trainers, the field's body of knowledge lacks interpretation of athletic training student development through the lens of constructive-developmental phenomena such as self-authorship. Therefore, there exists a critical need for expanding the field of athletic training's understanding, promotion, and assessment of student development through constructive-developmental theory such as self-authorship.

The ensuing sections comprise a review of literature, organized thematically and related to two overarching schemas—athletic training and self-authorship. This first section will provide background of the nature and nuances of the healthcare profession of athletic training and its evolution of educational preparation of practitioners.

The Profession of Athletic Training

Contemporary sports medicine can be conceived as a broad field of health care practices aimed at patient populations engaged in sport or physical activity. The field

hosts numerous specialized disciplines which can be divided into those responsible for enhancing athletic performance and those responsible for injury care and management (Prentice, 2014). Strength and conditioning, sport psychology, and exercise physiology represent examples of sports medicine disciplines mainly concerned with performance enhancement. Alternatively, orthopedic medicine and athletic training represent sports medicine disciplines concerned with injury care and management. Most disciplines in contemporary sports medicine are represented by distinct educational curricula, professional responsibilities, and career paths.

Legal regulation is another prominent factor differentiating “who can practice” and “how to practice” the various sports medicine disciplines. State practice acts represent formal legislation providing public assurance and protecting the specialization of a profession. Practice acts do more than define the identity of a particular body of professionals, however. They serve as formal scopes of practice. The scope of practice explicitly and legally defines the services a professional can and cannot perform. In the state of Illinois for example, “professional counselors,” “clinical professional counselors,” “clinical psychologists” and “licensed clinical social workers” are examples of state regulated titles and scopes of practice of professionals with legal rights to practice psychotherapy. Thus, because a “sports psychologist” is a psychotherapy professional, he or she must hold a state practicing license if intending to deliver psychotherapy services to athletic and physically active patients in Illinois. Similarly, an athletic trainer intending to practice is required to hold the appropriate practicing credential prior to delivering athletic training services to patients in Illinois. To recap, sports medicine is a broad field of specialized disciplines that work with athletic and physically active clients

and patients. Athletic training is the profession of interest for the ensuing sections and study.

This discussion moves now to explain the working conditions of athletic trainers, beginning by reviewing a history of the field of athletic training for students at both the undergraduate and graduate levels. This will include an examination of the various aspects of learning related to content, curriculum, and expectations of employers for positions requiring professional credentialing of athletic trainers. Such information is critical to understand before discussing self-authorship and its relevancy in the field of athletic training.

History

Certified Athletic Trainers (ATs) are American Medical Association recognized healthcare professionals, responsible for the provision of physical medicine, rehabilitative, and preventative services to ill and injured patients. The rise of athletic training in America parallels the history of collegiate athletics, particularly as they were grounded in early American colleges and universities. In the late 19th and early 20th centuries, American colleges and universities were constructing a “collegiate ideal” in which the sociocultural perception of “going to college” was transformed (Thelin, 2004). Whereas colleges in the mid-1800s experienced falling enrollments, the later end of the century brought increasing attention toward higher education. Increased sociocultural attention aimed at colleges and universities stimulated building of attractive new campus architecture. Newly developing social narratives of the “college man” and “college woman” as symbols of fashion and prestige also helped usher in a new American ideology of, *college* (Thelin, 2004). The new “collegiate ideal” was exacerbated by

economic modernization and industrialization of the time. In other words, college was becoming the place where socioeconomic mobility could commence. As one can imagine, identifying with a college was gradually becoming sought and engrained in the minds of the American public. This was the rich environment for which college athletics would mature.

With burgeoning collective identities held by student bodies of early colleges and universities, rivalries inevitably developed and were anchored in their newly formalized intercollegiate athletic teams. Having mascots, team colors, and cohesive identity, intercollegiate athletic teams further revolutionized the collegiate ideal. While college sports were denounced by some, others directed resources for informal competition with various sports as early means of enabling students to work off extra energies (Harvard University, 1826).

It was undergraduates at Yale and Harvard who were the initiators of sport clubs and intercollegiate athletic teams. Boat clubs formed at these institutions in 1843 and 1844, respectively, and represented the first organized intercollegiate athletic teams of American colleges (Whiton, 1901). Sports such as baseball and football gained traction in American society as rowing had effectively been obscured by affection toward football by the 1880s (Thelin, 2004). College athletic programs were gaining popularity, size, and necessitated management. Athletic associations (Thelin, 2004) were formed at institutions with prominent athletic programs and staffed with increasingly more professionalized personnel. Between 1890 and 1910, the “athletic directors” and coaching staffs—instead of students—were being recruited and hired to manage operations of the department and teams. While college athletics continued to grow in

social popularity and commercialism, it can be posited that sport-related injuries multiplied as well.

Harvard College's athletic trainer in 1881, James Robinson, has been considered the first collegiate athletic trainer (O'Shea, 1982). Until this era, there is little record of professional training, research, and practice of athletic training. In fact, the provision of medical care for athletes throughout the 1800s was predominantly directed by a team physician and the coach, while the athletic trainer's role was that of "water boy" and "rubber." It was not until approximately 1940 that the professionalism and education of athletic trainers sought unity and any form of standardization. Dr. S. E. Bilik, Oliver J. DeVictor, Matt Bullock, Herb Patchin, Jack Heppinstall, and Henry Schmidt are credited as the fathers of modern athletic training during the 20th century (O'Shea, 1982). By 1950, however, over 100 athletic trainers from various colleges and universities convened in Kansas City, MO, to form the official National Athletic Trainers' Association (NATA) (National Athletic Trainers' Association, 2014b). The newly formed NATA aimed to develop and maintain standards for the profession.

From this brief history, it can be reiterated that athletic trainers of the past may have only been responsible for taping, icing and rubbing athletes. Today, however, ATs are health care providers working with physicians to provide preventive care, emergency response, clinical diagnosis, therapeutic and rehabilitative intervention of injuries and illnesses (National Athletic Trainers' Association, 2014a). ATs can be found working in various practice settings including colleges and universities, hospital and clinical settings, occupational health, military, performing arts, professional sports, public safety, and secondary schools.

Educational Evolution

The development of athletic training education was foreshadowed by the standardization efforts marking medical education and is intimately linked with the history of its professional organization, the NATA (Delforge, 1999). Soon after forming the NATA in 1950, the National Secretary of the NATA, now referred to as the Executive Director, initiated creation of the Committee on Gaining Recognition. The committee's predominate concern was professional advancement of the athletic training profession through means of standardizing education requirements and implementing a national certification exam (Newell, 1984). This early committee was the predecessor to the NATA Professional Education Committee, which would later undertake duties of developing and approving athletic training education programs for decades (Delforge, 1999). Before the years of becoming formally accredited programs, the NATA employed academic standards for athletic training curriculum that programs necessitated meeting to be considered "NATA-approved." Graduating from an NATA-approved athletic training program became a criterion for eligibility to sit for the national certification exam. However, individuals could continue to pursue certification as ATs through avenues such as completion of an apprenticeship program, completion of a physical therapy program, or spending 5 years as an active athletic trainer (Delforge, 1999).

Athletic training education was fragmented and becoming certified to practice could be accomplished through numerous avenues. However, the creation of a certification exam served as a foundational marker in the professionalization of athletic training. It would also lead to increased standardization and equivalency among entering professionals. In 1990 the American Medical Association (AMA) officially recognized

athletic training as an allied health profession (National Athletic Trainers' Association, 1990). It has been noted that the primary purpose of the NATA seeking formal recognition from the AMA was for the purpose of accreditation through the AMA Committee on Allied Health Education and Accreditation (CAHEA). As such, in 1994, the first CAHEA accredited athletic training education programs were established at Barry University and High Point University (Delforge, 1999; National Athletic Trainers' Association, 1994).

Since the early years of accredited athletic training programs, there have been numerous adaptations in accreditation standards and increased number of programs across America. The most contemporary artifact in this history was in 2004 when the successor to the CAHEA, the Commission on Accreditation of Allied Health Education Programs (CAAHEP) and the NATA Board of Certification eliminated the internship route to an athletic training credential. Graduating from a CAAHEP-accredited, entry-level program became the only avenue of becoming a certified athletic trainer in America (Delforge, 1999). This marked a concluding step of athletic training standardizing its education and serving to “enhance consistency with professional preparation in other allied health disciplines” (Delforge, 1999; National Athletic Trainers' Association, 1996). Today, athletic training programs continue to be accredited and graduating from such a program still serves as a criterion for students to challenge the certification exam. Since 2006, though, the Commission on Accreditation of Athletic Training Education (CAATE) has served as the independent accrediting agency for athletic training education.

Three Levels of Accreditation

The CAATE accredits over 300 entry-level programs. Programs have traditionally been delivered at the baccalaureate level but there exist several post-baccalaureate degree programs accredited by the CAATE. The post-baccalaureate entry-level programs are known in the field as “entry-level masters” (ELM) programs. Currently, both bachelors and ELM programs serve as professional programs leading students to eligibility for challenging the certification examination.

A joint statement from the Athletic Training Strategic Alliance (i.e., the Board of Certification, the CAATE, the NATA, and the NATA Foundation) in May of 2015 changed the future of athletic training education. The statement issued a new mandate for the entry-level professional degree of athletic training to be delivered at the master’s level (Athletic Training Strategic Alliance, 2015). An implementation deadline was issued and indicated all Athletic Training Programs (ATPs) must be at the master’s level in no less than 7 years (Athletic Training Strategic Alliance, 2015). This reform in the entrance level does not mean current ATs necessitate obtaining an additional degree, but future students seeking to become ATs will necessitate completing a master’s level, CAATE-accredited athletic training program. The decision to ratchet up the entrance level came after several years of critical appraisal of the field, allied health professions, and the economic environment of healthcare as a whole (Athletic Training Strategic Alliance, 2015). Some of the major reasons for increasing the entry-level degree was to maintain “acceptance in the broader healthcare arena,” “improve patient outcomes,” “meet the expectations of the healthcare team,” and keep “our profession sustainable for generations to come” (Athletic Training Strategic Alliance, 2015).

The recent decision by the Strategic Alliance does not come without concern, however. Educators from the field have voiced concerns about an ELM format for athletic training (Petschauer, Levy, & Stilger, 2014). Apprehensions toward ELMs include, but are not limited to, a reduction of the quality of patient care due to decreased numbers of advanced practice post-professional athletic training degree programs; less production of scholarship and evidence-based practices due to entry-level students having little time to concurrently learn the necessary competencies to enter practice and engage in graduate level research; increasing the gap between the cost of earning a degree in AT and the slow-moving rise of AT salaries; and, further limiting the affordability and access to athletic trainers for secondary schools (Petschauer, Levy, & Stilger, 2014). Any change of this magnitude in an industry will be accompanied by conflict. Hence, the Strategic Alliance continues to seek resolving concerns from the field by launching a website providing more information, an implementation plan, and a place to field questions (Athletic Training Strategic Alliance, 2015).

In addition to entry-level education in athletic training, there exist 16 CAATE-accredited, post-professional athletic training degree programs across the nation. These programs lead to a master's or doctoral degree and are for students already credentialed as certified athletic trainers (Commission on Accreditation of Athletic Training Education, 2014). Post-professional, graduate education in athletic training is intended to promote lifelong learning, professional development, advanced knowledge and skills, and stimulate research and provision of evidence for practice (NATA Post-Professional Education Committee, 2015). Moreover, the ultimate purpose of ATs earning advanced

practice degrees is the improvement of patient-care (NATA Post-Professional Education Committee, 2015).

Since these programs are designed for already certified ATs, curriculum tends to center on programmatically determined “points of distinctiveness” (National Athletic Trainers' Association, 2002). These graduate students have already developed the knowledge and skills necessary to practice as entry-level professionals, thus, it is intended they enroll in post-professional programs with points of distinctiveness aligning with their professional interests. For example, an AT may seek to gain advanced knowledge in manual therapy techniques. He or she would research the various post-professional athletic training programs for those whose points of distinctiveness and curriculum involve coursework and training in manual therapies. The same program, however, may not be the best program for the AT seeking to gain advanced knowledge pertaining to educational and administrative topics in athletic training. Due to the accredited post-professional programs having unstandardized curricula, it is beyond the scope of this essay to examine all 16 programs’ contents. Instead, it is summarized that these programs declare points of distinctiveness ranging from emphases on injury biomechanics, manual therapies, and educational topics.

Contrary to this, the accredited professional programs (e.g., bachelors and ELM) all involve didactic, laboratory, and clinical education aligned with minimum education standards outlined by the CAATE. The ensuing section will serve to overview content and curriculum of entry-level athletic training degree programs. Furthermore, expectations of employers for positions requiring professional certification will be discussed.

Content, Curriculum, and Expectations

The Commission on Accreditation of Athletic Training Education holds athletic training programs accountable for compliance with the Standards for the Accreditation of Professional Athletic Training Programs. These standards are appropriately known among AT educators as *the Standards*. The Standards are meant to maintain quality in AT programming and public assurance that degree programs effectively prepare students for entrance into the AT workforce (Commission on Accreditation of Athletic Training Education, 2012). This is done through an annual programmatic review process, as well as, intermittent (e.g., 3, 5, 10 year) self-study and site visit procedures with the CAATE. Development, evaluation, analysis, and maintenance of athletic training programs are guided by and aligned with the Standards.

The Standards are developed through intimate communication between the CAATE, NATA, and the Board of Certification Inc.—the private, non-profit credentialing body for the field of athletic training. First, the NATA develops and publishes Athletic Training Education Competencies (known as *the Competencies*). These Competencies outline the knowledge, skills, and clinical abilities to be instructed in professional athletic training programs. It is important to note the Competencies do not outline how instruction should be delivered, only the specific content that must be instructed and assessed. Therefore, the Competencies are intended to represent a standardized yet flexible program of study (NATA Professional Education Committee, 2011). An NATA committee, the Professional Education Council (PEC) is responsible for developing and drafting the Competencies to ensure students are learning the necessary information before entrance into the field. Through open-call feedback

sessions and focus groups with experts, the PEC systematically determines what Competencies are necessary for entry-level practice of athletic training (NATA Professional Education Committee, 2011).

To bring this process almost full circle, while the NATA determines the Competencies to be taught in ATPs, the CAATE simply holds ATPs responsible for (a) upholding its Standards of programmatic administration, and (b) teaching and assessing the Competencies outlined by the NATA. With that, the public is assured that enrollment in any CAATE accredited ATP will result in a student's mastery of the same set of Competencies. Programs may differ in how Competencies are instructed and evaluated, there may even be content taught over and beyond what is required by the Competencies. All ATPs are, however, teaching the same "minimum requirements" of Competencies that draw from the same eight "content areas." These content areas include: (a) evidence-based practice, (b) prevention and health promotion, (c) clinical examination and diagnosis, (d) acute care of injury and illness, (e) therapeutic interventions, (f) psychosocial strategies and referral, (g) healthcare administration, and (h) professional development and responsibility (NATA Professional Education Committee, 2011).

Thus, employers of entry-level athletic trainers can confidently expect an applicant, having completed an ATP and passed his or her certification exam, to have mastered all of the competencies within these specific content areas. Employers can also expect several basic behaviors from entry-level applicants as they are emphasized throughout the professional degree curriculum. These behaviors include (a) recognition of the primacy of the patient, (b) understanding and executing duties in a team approach to practice, (c) practicing athletic training in a legally competent manner, (d) complying

with NATA's Code of Ethics and the Board of Certification's Standards of Professional Practice, (e) advancing knowledge through lifelong learning and evidence-based practice, (f) demonstrating cultural competence, and (g) exhibiting professionalism (NATA Professional Education Committee, 2011).

To bring the educational process of ATs full circle, the Board of Certification must be discussed. The Board of Certification is the only credentialing body for the field of athletic training (Board of Certification, 2010). It is a non-profit organization responsible for developing the credentialing program (i.e., examination) for individuals who have successfully completed a CAATE-accredited ATP. The Board of Certification conducts its own Role Delineation Study and Practice Analysis to determine what content should, appropriately, be assessed on the certification examination for entry-level ATs. Because the Role Delineation Study and Practice Analysis determines what content is tested on the certification exam, its findings and those of the Athletic Training Education Competencies are closely compared to ensure alignment exists between curricular and examination content (Board of Certification, 2010).

In conclusion, it is imperative for stake- and share-holders of athletic training to be informed of the educational preparation these professionals undergo prior to entering practice. Athletic training education has moved from a fragmented, unstandardized process in the mid-20th century to highly standardized, industry aligned, and an integrated process in its contemporary form. It is marked by the use of didactic, laboratory, and clinical education experiences employed to facilitate students' mastery of the knowledge, skills, and dispositions of the certified athletic trainer. Only after completing a CAATE-accredited professional athletic training program, gaining endorsement from his or her

ATP Director, having current certification in emergency cardiac care, and passing the Board of Certification examination can an individual be professionally and legally ready for employment as a certified athletic trainer (Board of Certification, 2010).

This discussion will now move to a more detailed examination of the ways of viewing clinical experiences of athletic training students in colleges and universities. In doing so, the work of educational theorists will be drawn on to discuss different conceptual frameworks for understanding the clinical component of athletic training education. A discussion of the educational, philosophical, and pedagogical views of clinical learning will be included.

Ways of Viewing Clinical Experiences in Colleges and Universities

As noted previously, entry-level athletic training programs are marked by their use of didactic, laboratory, and clinical education experiences aimed at facilitating students' mastery of the knowledge, skills, and dispositions of the certified athletic trainer. These programs are held accountable by their accrediting agency (the CAATE) to teach "minimum requirements" of Competencies that draw from eight "content areas" (NATA Professional Education Committee, 2011). While competencies are prescribed and must all be instructed, programs are allowed flexibility in their educational philosophies and pedagogical practices to deliver the competencies.

There are several rigid standards, however, that all ATPs follow when delivering program content. One of which is rotating students through *clinical education experiences* to support their acquisition and clinical application of knowledge, skills, and dispositions learned in the didactic (i.e., classroom) component of the degree program. A common form of administering an athletic training program is to develop and deliver

courses based on the NATA Content Areas (Potteiger, Brown, & Kahanov, 2012). For example, students beginning the ATP will enroll in an initial course, commonly referred to as “prevention and care.” This course is typical across programs and institutions and is characteristically aligned with the competencies in the “prevention and health promotion” NATA Content Area. Another common course sequence aligned with content areas in ATPs is the “lower and upper extremity clinical evaluation” courses. These are archetypal classes being taught in many ATPs. As one can imagine, their content is closely aligned with the competencies outlined within the “clinical examination and diagnosis” NATA Content Area. As such, there has become a common curriculum shared by most ATPs. It consists of the classes, *Introduction to Athletic Training*, *Care and Prevention of Athletic Injuries*, *Orthopedic Evaluation I*, *Orthopedic Evaluation II*, *Therapeutic Modalities*, *Therapeutic Exercise*, *Administration in Athletic Training*, and a *Capstone Course* (Potteiger, Brown, & Kahanov, 2012).

In addition to these courses, students are rotated through clinical education experiences, which are conducted with practicing clinicians in the institution’s surrounding community. The clinicians serve as “Preceptors” (formerly known as Approved Clinical Instructors) for the ATP. Preceptors are rarely formally trained in educational practices, thus, the CAATE mandates Preceptor’s undergo ongoing “Preceptor training” with the ATP Clinical Education Coordinator and/or Program Director (Commission on Accreditation of Athletic Training Education, 2012). Preceptors instruct and assess students in real-world clinical settings where his or her evaluation of the student is tied to a grade in clinical or practicum courses in the ATP curriculum.

The entire clinical education of students in an ATP must be delivered over a minimum of two academic years (Commission on Accreditation of Athletic Training Education, 2012). The intention is to ensure students are prepared to integrate didactic knowledge, practical skills, and professional affections upon entering the workforce. While these are only a fraction of the standards and commonalities among ATPs, the result of developing and delivering courses in such a way is thought to have created an inflexible “standardized cohort athletic training curricular design” (Potteiger, Brown, & Kahanov, 2012). In this design, didactic courses act as “gateways” students must progress through to reach the ensuing class. Because the courses are aligned with prescribed Content Areas and, over time, build upon the information learned in previous classes, the cohort progresses through the program at the same time and pace. Some researchers in athletic training argue this has created a programmatic delivery method too rigid to accommodate all learners’ development into entry-level professionals (Potteiger, Brown, & Kahanov, 2012). While providing an exhaustive analysis of curricular and instructional strategies used in athletic training is outside the scope of this section, the dialog shifts to discussing, particularly, the way clinical education experiences are viewed in the field of athletic training.

Clinical education is a mandatory component of educating athletic trainers for entry into practice (Commission on Accreditation of Athletic Training Education, 2012). It gives students the opportunity to bridge knowledge, skills, and abilities learned in the classroom with practical, real-world learning experiences. It also provides an arena for students to become socialized into the profession. Professional socialization is an integral component to students becoming prepared for entrance into the workforce

(Dinmohammadi, Peyrovi, & Mehrdad, 2013; Pitney, 2002; Price, 2009). It is supported that professional socialization incorporates much more than acquisition of knowledge and skills necessary to complete job tasks. It involves an individual learning, internalizing, and enacting the affections, values, beliefs, and dispositions of the particular social group. Moreover, the intended and unintended consequence of socialization into a profession is the attainment of a professional identity (Dinmohammadi, Peyrovi, & Mehrdad, 2013; Price, 2009).

As such, the field's "way of viewing" clinical experiences is as an invaluable component of the preparatory experience and intended purpose of bridging cognitive, psychomotor, and affective learning. As a reiteration of the purpose of clinical education being development of students' knowledge, skills, and affections, Standard 47 in the CAATE's Standards for the Accreditation of Professional Athletic Training Programs states, "Clinical education must provide students with authentic, real-time opportunities to practice and integrate athletic training knowledge, skills, and clinical abilities, including decision-making and professional behaviors required of the profession in order to develop proficiency as an Athletic Trainer" (p. 7).

Educational Theory Informing Athletic Training Education

Education in athletic training has been informed by educational theory and can continue to be viewed through lenses of educational theorists. This discussion moves now to examining educational theory informing athletic training education. Prominent and relevant educational theories underlying athletic training clinical education include learning over time (Amato, Konin, & Brader, 2002; Feiman-Nemser, 2001) and professional socialization (Dodge, Mitchell, & Mensch, 2009; Mazerolle, Gavin, Pitney,

Casa, & Burton, 2012; Pitney, Ilsley, & Rintala, 2002; Pitney, 2002). While these theories are not all-inclusive of those that have informed athletic training education, they represent hallmark constructs. This following discussion, then, will analyze *learning over time* and *professional socialization*. Discussion of these theories will lead to one focused on an unexplored educational construct in the athletic training education literature, self-authorship. Self-authorship will be used in the subsequent sections as a new, constructive-developmental construct to inform advancement of athletic training education.

Learning Over Time

The concept of learning over time was first developed as a model aimed at improving the academic preparatory experiences of preservice teachers (Feiman-Nemser, 2001). The intended consequence of teacher education is for preservice teachers to gain necessary knowledge of how to teach, develop affection toward teaching, and develop the ability to actually teach students (Feiman-Nemser, 2001). Feiman-Nemser (2001) based her educational philosophy on Dewey's (1938) ideology of education and experience—that is, every experience should be viewed as preparatory for later experiences of broader and deeper quality. In other words, an individual, in this case a preservice teacher, must work to extract the full meaning of present experiences during his or her training to teach. By doing so, when he or she becomes a teacher, he or she will be best prepared to perform learned skills and abilities again, and with optimum quality.

Thus, a conceptual coherence of knowledge, skills, and abilities learned throughout a teacher education program should exist to enable the preservice teacher opportunities and time to construct deeper meaning and effective practice. Purposeful

design of field experiences is a way to promote coherence within an academic program (Feiman-Nemser, 2001). It is during a purposeful and integrated field experience where a student undergoes “observation, apprenticeship, guided practice, knowledge application and inquiry” (Feiman-Nemser, 2001, p. 1024)—all of which can promote learning of desirable lessons in preparation for autonomous practice.

Learning over time has been discussed in athletic training educational research for more than a decade (Amato, Konin, & Brader, 2002). It was first introduced as a concept to be employed in athletic training programs in the 3rd edition of the *Athletic Training Education Competencies*. It was to be a process of students’ acquisition of skills, progression of those skills, and reflection. Because the clinical skills AT students learn are a collection of interrelated and interdependent competencies, they have been traditionally and continue to be instructed and assessed in a continuum fashion (Amato, Konin, & Brader, 2002). Learning over time, then, in athletic training education has served as a philosophy guiding the conceptual cohesiveness of program administration. It has evoked and maintained a “big picture” approach toward instruction and assessment of the knowledge, skills, and dispositions of athletic training students.

A student, for example, learning how to manage an acutely dislocated shoulder will necessitate a cohesive understanding of the anatomy and etiology of the injury, as well as, proper treatment procedures. To make this case more complex, the same student must understand psychosocial responses to injury and be able to engage a patient who has undergone a traumatizing life event. Because the knowledge, skills, and dispositions required to effectively manage this case are complex and integrative, the student must have been given opportunity to acquire the skills, incrementally progress those skills, and

reflect on his or her didactic and practical experiences.

Feiman-Nemser's (2001) and Dewey's (1938) ideologies, as discussed earlier, would support this athletic training student having adequate time and opportunity to extract full meaning of learned experiences. By doing so, when he or she becomes responsible for managing a real-world clinical case, he or she will be prepared to perform learned skills and abilities again, and with optimum quality. Also, as clinical education is a purposeful, integrated field experience by nature (Commission on Accreditation of Athletic Training Education, 2012; Feiman-Nemser, 2001), it is the anchor attribute of athletic training education that provides students opportunity to bridge knowledge, skills, and abilities learned in the classroom with practical, real-world learning experiences. Thus, learning over time, an educational philosophy explained by Feiman-Nemser (2001) serves as an applicable conceptual framework for understanding and continuing to develop the clinical component of athletic training education.

Those responsible for hiring entry-level athletic trainers must recognize that although all AT students undergo the same "accredited" education, they may enter the workforce having undergone different clinical and didactic educational experiences. Therefore, educators and educational researchers should continue to seek ways of improving the clinical education experience for students. Likewise, employers should approach young professionals with patience and support as they continue to navigate the transition from "clinical education" to autonomous practice. Unfortunately for some, learning over time may extend beyond the student's time in school. It is reasonable to posit that additional learning of even entry-level skills and dispositions continues following graduation for all students. Thus, in recognizing that educators, preceptors, nor

employers alone can optimally develop athletic trainers of the future, a team approach between constituents should be forged to facilitate optimal transition and quality of practice.

Professional Socialization

Students earning professional degrees in athletic training undergo a minimum 2 years of classroom and clinical education experiences (Commission on Accreditation of Athletic Training Education, 2012). Such experiences aid in their development of the knowledge, skills, and dispositions of practicing athletic trainers. Additionally, being engaged in immersive clinical education experiences serves as a conduit for students to integrate knowledge, skills, and abilities learned in the classroom into practical, real-world contexts.

One of the developmental benefits of clinical learning is students becoming socialized into the profession. *Professional socialization* is an integral component to students becoming prepared for entrance into the workforce (Dinmohammadi, Peyrovi, & Mehrdad, 2013; Pitney, 2002; Price, 2009). Becoming professionally socialized incorporates much more, however, than acquisition of knowledge and skills necessary to complete work tasks. It involves an individual learning, internalizing, and enacting the affections, values, beliefs, and dispositions of the particular social group. Ultimately, socialization into a social group causes attainment of a professional identity (Dinmohammadi, Peyrovi, & Mehrdad, 2013; Price, 2009).

The ensuing section will discuss the nature of students' development of the expectations, skills, knowledge, and dispositions required of entering the athletic training workforce. To help describe this phenomenon, which will be referred to as professional

socialization (Mazerolle, 2014a), research from allied healthcare fields will be intersected with the discourse of socialization in athletic training. Finally, the appropriate learning experiences for facilitating socialization and success upon workforce entry will be discussed.

Socialization in allied health. Authors studying the construct of professional socialization in the field of nursing have developed a working definition as "a process with attributes of learning, interaction, development, and adaptation" (Dinmohammadi, Peyrovi, & Mehrdad, 2006, p. 28). This definition incorporates four major attributes of the complex professional socialization process. The process is complex because of its elusive predictability, nonlinearity, dynamism, individuality, and ongoing nature. Therefore, a working definition may best fit such a dynamic and diverse construct like professional socialization.

An additional study from the field of nursing investigated work environment factors that affect newly graduated nurses' transitions to the workplace (Duchscher, 2001). The results yielded three major themes encompassing the pre-service nurses' responses when interviewed: (a) doing nursing; (b) the meaning of nursing; and (c) being a nurse. Within the "doing nursing" theme, it was revealed that the newly practicing nurses were challenged in their transition from student to clinician. They were forced to move from an educational environment that demanded linear, dichotomous thinking to more holistic and contextual clinical thought processes necessary in the real-life practice of nursing. Moreover, they were forced to adopt an ability to weigh and consider or critique policies/practices in their nursing setting rather than simply enacting prescribed behaviors such as when they were nursing students.

The "meaning of nursing" theme developed as the participants demonstrated acquiring their identities as interdependent professionals in the work environment, rather than student observers. The focus of the "meaning" for being present at the clinical facility moved from egocentric (i.e., focusing on their inadequacies and development) to a more patient-centered meaning. This finding of moving from ego-centered to patient-centered practice is congruent with what authors have noted among novice professionals in the allied health field of physical therapy (Black et al., 2010). Black et al. (2010) interviewed novice physical therapists and demonstrated as they progressed through their first year of practice, the "value of their role moved rapidly forward into taking social responsibility for patients, being patients' advocates, and seeking out leadership roles" (p. 1766).

The "being a nurse" theme in Duchscher's (2001) study revealed newly hired nurses developing *identities* as professionals, versus students, in approximately 5 months of practice. Identity development was rooted in "letting go" of worries of inadequacy and gaining comfort with the innate fallibility of being healthcare providers. Moreover, the "being a nurse" theme revealed that these new nurses adopted their own practices and habits of self-reflection, which led to improved ability to adapt their behavioral and emotional responses in the workplace. It was also revealed to be a perceived divide between nursing education and the real world as the participants noted being unprepared for the full weight of responsibility that practicing nurses bear. Although new nurses noted the importance of mentoring and guidance in the student-to-professional transition, they were dissatisfied with the lack of relationships and support they received from preceptors.

How might any of this information gleaned in nursing and physical therapy literature inform how one understands the nature of athletic training students' socialization processes? Allied health professions are just that, *allied*. These professionals often learn and work in close proximity, if not together. Likewise, the schooling processes of nurses, physical therapists, and athletic trainers are similar in their cohort styled curricula. Students systematically matriculate through these professional programs learning prescribed competencies in each advancing course and apply didactic learning in structured clinical education experiences. With such similarity, complexity, and importance surrounding the socialization of students in any professional program, it is advantageous for understanding and insight to be shared across disciplines. Thus, the discussion will move now to explaining the current understanding of the nature of professional socialization in athletic training.

Socialization in athletic training. Socialization of athletic training students is a fundamental process occurring as they matriculate through a CAATE-accredited athletic training program (Mazerolle, 2014a). Beginning early in the student's interest in the discipline is a form of socialization referred to as, *anticipatory socialization* (Pitney, 2002). This phenomenon can occur as early as high school when a student-athlete interacts with his or her school's athletic trainer and gains interest in pursuing the same career. It can also occur during initial "Introduction to Athletic Training" coursework and observational experiences. Regardless, anticipatory socialization is an early process by which a person anticipates what it will be like to be a member of a social group they desire or will soon belong (Pitney, 2002).

Such early socialization is critical in a student's acquisition of an accurate appreciation of the expectations, skills, knowledge, and dispositions required within the athletic training curriculum and workforce (Mazerolle, 2014c). Hence, athletic training educational researchers recommend the use of structured and directed observational experiences for students before they enter an athletic training clinical program. The observational experience should involve purposeful time spent working with preceptors at clinical sites and integrated formal assignments (e.g., reflection journaling, completion of question/objective sets, and a checklist of experiences to participate in while at a clinical site). All of which, plausibly, could help with retention and socialization of athletic training students who are later admitted into the clinical program (Mazerolle, 2014c).

Through one-on-one phone interviews with athletic training Program Directors, Mazzerole, Bowman, and Dodge (2014a) documented structured, facilitated activities being employed in athletic training programs to integrate students into the roles and expectations of the program and profession. Program Directors noted using introductory courses combined with observation experiences—much like recommended by Mazerolle and Dodge (2014c). Program Directors intended for students to begin learning, first hand, the responsibilities and affections of practicing athletic trainers before proceeding to the rest of the coursework and clinical experiences. Other formal socializing efforts in athletic training programs were represented by orientation sessions, provision of program handbooks, athletic training student clubs, and organized peer mentoring (Mazerolle, 2014a). While the aforementioned socialization efforts were formally structured by AT Program Directors, informal processes were noted to facilitate socialization of students as

well. Social gatherings (i.e., paintball, costume parties, and bowling) involving students, faculty, and preceptors were used to help integrate students into the athletic training community. Similarly, peer mentoring, organized by students, enabled upper level students to personally engage lower level students and help socialize them into the program and profession.

Pitney, Ilsley, and Rintala (2002) constructed a theoretical framework for understanding professional socialization in athletic training. They discussed the concept of "symbolic interactionism" as a theory indicating a person's behavior toward some phenomenon is based on the meaning that person has constructed about the phenomenon. Moreover, the meaning that the person constructs is a product of his or her interaction with other and all social phenomenon. Thus, much like nurses (Duchscher, 2001) and physical therapists (Black et al., 2010), athletic trainers' construction of the meaning of their work is dependent on their interprofessional and environmental experiences. As the clinical component of athletic training education exposes students to at least two academic years of clinical experiences with various professionals and practice environments (Commission on Accreditation of Athletic Training Education, 2012), one can posit these students have developed and/or are developing *meaning* of their work as athletic trainers.

An additional investigation observed professional socialization processes of athletic trainers in the high school setting (Pitney, 2002). It demonstrated high school athletic trainers tending to experience informal induction into their practice setting. This meant they did not participate in formal orientation events or other means of the organization educating them of their new roles and responsibilities. Participants gained

understanding of their roles and responsibilities through informal social interactions with coaches and athletic directors. Essentially, these athletic trainers were expected to enter their new roles with the ability to function independently. These findings stimulate the question of whether or not it is appropriate or possible for entry-level healthcare professionals (or any college graduate) to be expected to engage in completely autonomous work immediately following graduation and workforce entry.

This investigation also reveals disconnect between students' interactions with the expectations, skills, knowledge, and dispositions required within the athletic training curriculum and those in the workforce. While in the clinical program, students are constantly under supervision by a faculty member or clinical preceptor. This is a very formative process whereby all activities, experiences, and support structures are student-centered. Observing this phenomenon through the framework of Sanford's (1967) *challenge and support* concept, students are challenged while in school and very much supported. Upon entering the workforce, however, these same students are expected to overcome workplace challenges without the formal support of faculty and clinical preceptors. Sanford's (1967) concept of challenge and support exposes that while athletic training programs must scrutinize curriculum to determine if there exists "support" for the "challenges" students face, so too must employers of entry-level athletic trainers. One example of a "support" employers of entry-level athletic trainers can employ is to formally induct the new hire into the organization. This process may diminish role ambiguity and enable the new employee to work toward achieving his or her expected roles and responsibilities. Doing so may improve the transition experience and interactions of these professionals in the workforce.

Some may question the appropriateness of centralizing the student in his or her training, however, and speculate it generates an ego-centered professional who has difficulty focusing on patient needs upon entering the workforce. This should be cautioned as a real possibility as nursing (Duchscher, 2001) and physical therapy (Black et al., 2010) literature has documented those professionals moving from ego-centered to patient-centered practice during early career years. Novice physical therapists noted, for example, as they progressed through their first year of practice, the “value of their role moved rapidly forward into taking social responsibility for patients, being patients’ advocates, and seeking out leadership roles” (Black et al., 2010). Thus, it is recommended students be informed of this unique transition they will likely undergo. Faculty and preceptors of athletic training programs should engage in direct dialogue with students about anticipating moving their focus from learning competencies for “their development” to learning them “for the patient’s benefit.” Such dialogue can help students conceptualize the dynamic meaning of *why* they are learning particular knowledge, skills, and dispositions—it is “for them” now, but will soon be “for the patient.”

As the intention of this section was to explain the hallmark educational constructs informing athletic training educational discourse, the discussion will shift toward one surrounding an unexplored educational construct in athletic training, self-authorship. The following section will examine self-authorship by developing a theoretical framework, explaining its dynamic phases and dimensions, and revealing its relevancy as a developmental learning outcome for 21st century education and athletic training education. Following this will be a section examining methodologies employed to assess

the self-authorship phenomenon and how such assessment practices should and can be utilized in athletic training education.

Self-Authorship

This discussion shifts now to conceptualizing the educational theory of *self-authorship* (Baxter Magolda, 1999). Technology, economics, sociocultural norms, and personal and work responsibilities are just a few of the innumerable factors that make adult life complex. Such complexities of adult life demand an individual have the capacity to construct his or her own visions, demonstrate responsibility, practice informed discernment, and behave appropriately (Baxter Magolda, 1999). It should not, however, be assumed that navigating the complexities of adult life simply requires skills and proper behavior. Optimal progress, conversely, necessitates one's ability to accurately organize his or her experiences and world. In other words, an individual must be able to *author* meaning of themselves and the world around them—this is self-authorship.

The dimensions of self-authorship. The process of self-authorship requires more than merely organizing life experiences. It requires advanced cognitive appraisal and behavioral enactment of who one is (e.g., intrapersonal identity), who one is in relation to others (e.g., interpersonal identity), and how meaning is being constructed (e.g., metacognition). These three components make up the dimensions of self-authorship.

Intrapersonal dimension. While not the central focus of the college experience, gaining the ability to view and understand one's self is critical in an individual's journey toward self-authorship. Hallmarks of a mature intrapersonal dimension include knowing

one's own history, understanding one's own capacity for autonomy and connection, and having integrity (Baxter Magolda & King, 2004). Constructing and internalizing the complex meaning of *self*, an individual becomes able to authentically, intimately, and meaningfully engage learning, work, and relationships (Baxter Magolda, 2001b).

Interpersonal dimension. An individual journeying toward self-authorship must develop understanding of who he or she is in relation to others. Progress in the interpersonal dimension of self-authorship enables an individual to function interdependently with others amidst the complex and often ambiguous nuances of life and work (Baxter Magolda, 2001b). Furthermore, it is this dimension that fuels one's capacity to engage in relationships, personally and professionally, marked by respect and appreciation for others' identities and cultures (Baxter Magolda & King, 2004). Intercultural maturity, appreciation for difference, and an ability to integrate multiple perspectives, then, comprise hallmarks of a mature interpersonal dimension.

Epistemological (cognitive) dimension. Typically viewed as the primary focus of higher education, the epistemological (cognitive) dimension is comprised of *how one knows* and how one decides what to believe (Baxter Magolda, 2001b). This dimension is built on an individual's "epistemic assumptions about the nature, limits, and certainty of knowledge" (Creamer et al., 2010, p. 550). Indicators of a mature epistemological dimension include an individual's intellectual power, reflective judgment, and contextualized discernment (Baxter Magolda & King, 2004).

As these aforementioned dimensions are closely intertwined, the construct of self-authorship becomes a complicated phenomenon. Development of self-authorship depends on individuals' maturity in each dimension and collective integration of the

dimensions. In other words, maturity in one dimension facilitates maturity in another, and, achievement of self-authorship is result of an individual's collective and integrated maturity within and between the dimensions (Baxter Magolda, 2001b).

The phases of self-authorship. The construct of self-authorship is evolutionary by nature as individuals tend to journey (e.g., progress or regress) through its phases. Baxter Magolda (1992) described four consistently emerging phases in the process—(a) following external formulas, (b) the crossroads, (c) becoming the author of one's life, (d) internal foundation. Generally, the phases evolve from a reliance on external authority's prescription of knowledge and identity to an internally constructed self-definition. It must be reiterated that self-authorship is a complex phenomenon in that it is a multi-dimensional and multi-phase construct. Essentially, the individual dimensions develop along the same continuum of phases—thus, it is assumed each dimension's evolution along the continuum can be teased out and examined. The following section will discuss the phases individuals tend to undergo in their journey toward self-authorship.

Following external formulas. Early in the self-authorship journey, individuals tend to rely on *external formulas* to inform their views of knowledge (epistemological dimension), sense of self (intrapersonal dimension), and relationship to others (interpersonal dimension). In this phase, an individual's affections have their source in and are prescribed by external authorities—family members and sociocultural narratives, for example. Instead of engaging in complex meaning-making and self-authorship, individuals in this phase uncritically accept meaning and ways of knowing. Moreover, individuals in this phase enact intra- and interpersonal identities aimed at gaining others' approval and satisfying others' expectations.

The crossroads. Although there exist innumerable journeys preceding this phase, there tends to be commonality in the general etiology and manifestation of one coming to the *crossroads* (Baxter Magolda, 2001b). Typically, the crossroads phase occurs after a realization that reliance on external formulas has led one to insufficient or unfulfilling results. Such dissatisfaction with externally constructed ways of knowing charges the individual with a new found awareness of the necessity for internal construction of *who one is, who one is in relation to others, and the origin of knowledge*.

While it may seem this phase occurs as an abrupt, “ah ha” moment, that may not be the case. Individuals immersed in the crossroads phase are busy navigating the internal (and sometimes external) conflicts of their diminishing regard for outside expectations of him or her. He or she is also concerned with the influence a new, internally defined self will have on his or her relations with others (Baxter Magolda, 2001b). The crossroads, then, is an essential point in the journey to self-authorship as it initiates the shift from succumbing to external formulas to constructing, internalizing, and accepting an internal voice.

Becoming author of one’s life. Following development of one’s own voice during the crossroads phase, the individual begins to employ that voice, or internally defined self, to construct (i.e., author) new epistemic assumptions (cognitive dimension), intrapersonal identity, and interpersonal identity (Baxter Magolda, 2001b). This marks the beginning of the *becoming author of one’s life phase*.

In this phase, important changes occur including acknowledgement of the uncertainty of knowledge, critical appraisal of experiences and information, and enactment of internally defined beliefs in personal and professional contexts. Such

meaningful changes inevitably lead to an even further emergence of one's sense of self and renegotiation of previously existing understandings and relationships (Baxter Magolda, 2001b).

The *becoming author of one's life* phase is highly dependent on the individual's life circumstances that led to his or her crossroads. For example, if an individual underwent a crossroads phase predominated by his or her intrapersonal identity being challenged (e.g., instead of his or her cognitive or interpersonal dimensions being challenged), his or her *becoming author of one's life* phase will, too, be predominated by authoring in the intrapersonal dimension. Even when the *crossroads* and *becoming author* phases are predominated by internal restructuring of a particular dimension, the other dimensions will, in time, also undergo internal restructuring. This reveals the complex, interdependence of the dimensions and phases of the self-authorship phenomenon (Baxter Magolda, 2001b).

Internal foundation. Development through the earlier phases stimulates continual authoring of the dimensions throughout the lifespan. The internally defined frameworks developed and used in the earlier phases act as lifelong scaffolding by which the individual will continue using in his or her appraisal and answering of questions regarding his or her intrapersonal identity, interpersonal identity, and epistemic assumptions (Baxter Magolda, 2001b). In essence, the complex meaning-making capacity of self-authorship becomes solidified as an *internal foundation*—upon which the complexities of life, work, and school are navigated.

Theoretical origin. The self-authorship phenomenon has its theoretical origin in the constructive-developmental work of Kegan (1994). His conceptualization of the

subject-object relationship is central to complex meaning making processes. The subject-object relationship supports that during the meaning-making process, there are elements an individual is subjected to and becomes “had by”—these are *subject(s)*. On the contrary, there are elements an individual can make *object* of his or her thought, reflection, and action—these are *object(s)*. Those elements that are objects, then, are “had” by an individual, while, he or she is “had by” those elements that are subjects (Kegan, 1994, p. 34).

In this constructive-developmental process described by Kegan (1994), subjects can become objects through complex meaning-making. Translating this constructive-developmental theory of the subject-object relationship to the journey toward self-authorship, subjects (e.g., external influences, authorities, and formulas) can become object—later being “had by” the individual as he or she internally defines, constructs, and internalizes the phenomena.

Theoretical assumptions. Underlying and guiding this study are several assumptions. The early portion of this section will discuss assumptions underlying conceptualization of the self-authorship phenomenon to be studied. These theoretical assumptions include the *meaning-making process*, *constructivism*, and *developmentalism*.

The meaning-making process. The first conceptual assumption is of the *meaning making process*. This process is assumed to be highly contextual in that when an individual experiences some event, for example a provocative discussion within a seminar course, the event itself is rendered *meaningless* until it is made sense of by the individual (Kegan, 1982). In this case, the content of the provocative discussion holds no meaning until the individual contextualizes it within himself or herself. Thus, for the

educator and researcher, understanding the content of the student's event/experience may be of less value than understanding *how* the student "makes sense" of his or her experience of the event.

Constructivism. The second conceptual assumption is the *constructive* nature of self-authorship. The *constructivism* assumption supports that individuals have and enact particular structures, or processes, about which they tend to construct meaning of experiences. Elements perceived as important, the rationale for making a decision, and the basis for an individual's governing beliefs serve as examples of structures an individual may use to construct meaning of a certain experience (Baxter Magolda & King, 2012). For example, two voters may agree on the same political policy but for different reasons. In this case, the policy can be considered the "content" of the meaning-making process, while the voters' rationales for supporting the policy represent the "structure" informing *how* meaning is attributed to the political policy. One voter rationalizes her support for the policy because she believes it benefits the community at large, while, the other voter rationalizes his support for the policy because it appears to benefit his personal situation. Both voters agree, or have constructed similar meaning of the "content" but did so using different thought processes, or "structures."

The constructivism assumption, furthermore, supports that understanding people's points of views or "what they think" is less important than understanding the structure or process of making such meaning, or "how they think" (Baxter Magolda & King, 2012). Moreover, the structure of how one organizes meaning is independent of the content of the meaning—thus, one does not determine the other (Kegan, 1994).

Developmentalism. The third assumption is that of *developmentalism*. This theoretical assumption supports the dynamic, evolutionary nature of meaning-making (Baxter Magolda & King, 2012). Meaning-making capacity becomes increasingly complex over time. Thus, the process of developmentalism is not a linear series of discrete steps but a continuous and cyclical process (Baxter Magolda & King, 2012). In developmentalism, it is the individual's meaning-making structures that are becoming increasingly complex—particularly as result of contextual demands being placed on him or her. For example, an individual's structure about which he or she comes to make meaning of his or her identity may develop at a slow pace and low intensity, simply because he or she is not experiencing any demands causing him or her to make meaning of his or her identity. On the contrary, this individual may be charged with having to think about broad, somewhat irreducible social issues in a college course. This places a demand on the student to begin enacting and advancing his or her structure (i.e., processes) of making-sense of the particular social issues.

The developmentalism assumption also supports that an individual, at some point in the evolution of his or her meaning-making capacity, will become able to differentiate and re-integrate his or her own structures. In other words, in advanced stages of developmental meaning-making, an individual develops a metacognitive ability to make his or her own thought processes object of his or her thought. This enables the individual to dynamically differentiate wanted and unwanted structures, while integrating and re-constructing new structures (Baxter Magolda & King, 2012). Such metacognition is stimulated by and necessary for navigating content that is incongruent with the individual's existing structures. In other words, when someone is challenged to make-

meaning of some experience he or she has never experienced, or an experience is incongruent with his or her current ways of making meaning, he or she will deconstruct, then reconstruct new structures to allow meaning-making to occur (Baxter Magolda & King, 2012).

The previous several paragraphs have discussed theoretical assumptions underlying conceptualization of the self-authorship phenomenon. The assumptions, meaning-making process, constructivism, and developmentalism, illustrate the generally constructive-developmental nature of self-authorship. Moreover, constructive-developmental meaning making becomes the tool by which an individual relies on in his or her journey toward self-authorship and, consequently, his or her ability to achieve learning outcomes in the collegiate journey. Understanding the theory underlying self-authorship has laid a foundation for better understanding its development. With that, while the previous paragraphs discussed underlying theory of self-authorship, the ensuing paragraphs will illustrate its process of development.

Development of Self-Authorship

Developing self-authorship is a complex process, being initiated and occurring in various forms for different individuals. Generally though, the development of self-authorship tends to occur in an evolving progression from reliance on externally defined beliefs, affections, identity, and epistemic assumptions to internal definitions of the same. More specifically, Baxter Magolda (1992) described four consistently emerging phases in the process—(a) following external formulas, (b) the crossroads, (c) becoming author of one's life, and (d) internal foundation.

A key component of this developmental process is the initiation and navigation through the crossroads phase. Although innumerable pathways may precede this phase, there tends to be commonality in how individuals come to their crossroads (Baxter Magolda, 2001b). Typically, the crossroads phase is catalyzed by individuals being faced with a decision or life circumstance that his or her current external formulas provide insufficient or unsuccessful insight. Such dissatisfaction with formerly externally constructed ways of knowing charges the individual with a newly found awareness of the necessity for internal construction of *who one is*, *who one is in relation to others*, and *the origin of knowledge*.

This phase may not occur as a simple and abrupt “ah ha” moment. Instead, individuals immersed in the crossroads phase are busy navigating internal (and sometimes external) conflicts of their declining concern for outside expectations. He or she is also concerned with the influence a new, internally defined *self* will have on his or her relations with others (Baxter Magolda, 2001b). The crossroads, then, is an essential point in the journey to self-authorship as it initiates the shift from succumbing to external formulas to constructing, internalizing, and accepting an internal voice.

Moreover, the journey toward self-authorship depends on learning experiences that support meaning making. For students to do so, they must be engaged in learning environments which are developmental in nature, or as Baxter Magolda (1999) would describe, they must be transitional cultures. This environment should be one where, “diverse cultural resources allow for the fashioning of new identities within existing configurations of power” (Giroux, 1992). Thus, an ideal environment for self-authorship to be harbored is one, as Giroux (1992) and Baxter Magolda (1999) support, where

students are challenged, yet supported, to redefine their epistemological, intrapersonal, and interpersonal worlds. Baxter Magolda (1999), specifically, offers three principles to help host a transitional culture within a learning environment and facilitate students' self-authorship development. The three principles include validating the student as knower, situating learning in students' own experience, and defining learning as a mutual construction of meaning.

The following section will work to explain the three principles of this optimal environment for self-authorship development. These principles, together, form the *learning partnership model* and represent the bridge between theory and practice of self-authorship development. Thus, the ensuing section will illuminate curricular and pedagogical considerations surrounding the development of self-authorship.

Curricular and pedagogical considerations. Learning, especially clinical learning in healthcare education is intended to serve as a bridge by which students can navigate the complexities and interdependencies of course content, practical skills, and evolving affections. As such, curricular planning should foster cohesive learning environments where students construct and re-construct knowledge, abilities, and affections of their world and the world around them. In doing so, a curriculum should serve as the formula for which self-authorship is developed among students. Borrowing from literature within nursing education, the concept of *curriculum* refers to the overall structure of learning experiences (Scheckel, 2009). Learning experiences, then, should be designed in alignment with the program's mission, philosophy, intended outcomes, and methods of assessment (Scheckel, 2009).

As such, the proposed learning partnerships model (Baxter Magolda & King, 2004) is not intended as a rigid structure to follow when delivering academic programming but as fundamental tenets for various academic disciplines to use in guiding program administration efforts to develop student levels of self-authorship. It must be noted that the learning partnerships model is rooted in constructive-developmental pedagogy by nature as it requires individuals have and enact particular structures, or processes, about which they tend to construct meaning of experiences—constructivism (Baxter Magolda & King, 2012). Moreover, it is a dynamic, evolutionary process of increasingly complex meaning-making—developmentalism (Baxter Magolda & King, 2012). Thus, the process of journeying toward self-authorship as provoked by the learning partnerships model is not a linear series of discrete steps but a continuous, cyclical, increasingly complex process (Baxter Magolda & King, 2012). The next several paragraphs will tease out and expound on the three tenets of the learning partnerships model for promoting self-authorship development.

Validating student as a knower. The first principle of the learning partnerships model is validating the student as knower. This means intentionally raising students' awareness of their voices, minds, and rights to express themselves throughout the learning process (Baxter Magolda, 1999). Baxter Magolda (1999) supports functional ways of validating the student as knower can be done through authentically caring for and respecting the students, establishing a more personal pedagogical relationship, and encouraging students to take risks in their thinking.

Care and concern for students may manifest as increased opportunities for interaction between students and faculty members. Faculty members may choose to

increase the number of office hours held or increase his or her flexibility to accommodate meeting and engaging students outside of scheduled class time. Respect can be established through treating students as future professionals instead of uninformed pupils. This welcomingly acknowledges the student's value and place in the learning process. A more personal pedagogical relationship would also be represented by enacting humanness when interacting with students—for example, talking *with* them instead of *at* them, communicating on a first name basis instead of as Dr. So-and-So, and investing in the students' interests and experiences during the learning process.

Situating learning in the student's own experience. The second principle of the learning partnerships model is structuring classroom and field learning experiences in ways that situate learning into the student's own experience. The learning environment should be one where students' life experiences are not "left at the door" or perceived as irrelevant. Rather, knowledge, skills, and dispositions previously known and being learned by the student should be situated into the students' real world experiences. This invites students to become active participants in the learning process. Much like the Freirean (1970/2000) concept of *dialogical teaching* where Student and Teacher engage in a shared, unauthoritative dialogue, activities such as storytelling (i.e., journaling, reflection/response writing, and low stakes group discussion) may help students to truly situate learning into their own experiences.

Learning as mutually constructing meaning. The third principle of the learning partnerships model is structuring all student-faculty interaction as a relationship where meaning and learning are mutually constructed. The Freirean (1970/2000) concept of dialogical teaching finds parallels in this principle, too, as the Teacher attempts to move

away from his or her omnipotent authority and toward mutual, open-minded dialogue. Functional ways the omnipotent authority of the teacher may be dissolved is through strategic physical positioning and posturing in a classroom. For example, a classroom where students are seated in rows of desks facing the teacher who is standing facing them in the front of the class produces an authoritative position of the teacher. Instead, the teacher could sit *with* the students while engaging in dialogue. This method may help disarm the imbalance of power between teacher and student.

Despite the learning partnerships model not being a comprehensive curricular prescription, it provides key tenets for any curriculum (structure) to align. As noted previously, curricular planning should aim to foster cohesive learning environments where students construct and re-construct knowledge, abilities, and affections of their world and the world around them. Thus, the learning partnerships model does so by sharing tendencies from numerous educational theories including learning over time and for the purpose of this study, self-authorship.

Much of the learning partnerships model also aligns with previous authors' conditions for an effective and meaningful educational curriculum. In addition to the aforementioned Freirean concept of dialogical pedagogy (1970/2000), the learning partnerships model fosters a way of delivering classroom and experiential learning through relevancy to the student's experiences, recognition and engagement of diverse perspectives, and critical appraisal of current assumptions (Chickering & Reisser, 1993; Baxter Magolda, 1999). As such, the learning partnerships model is a plan by which academic faculty and staff can design curriculum to effectively stimulate self-authorship development for students within any chosen discipline.

The previous section offered insight to an optimal curricular and pedagogical environment which best promotes self-authorship development. In doing so, the learning partnership model (Baxter Magolda & King, 2004) and its three principles (validating student as a knower, situating learning in the student's own experience, and learning as mutually constructing meaning) were illuminated. These principles, together, form the learning partnership model and represents a bridge between theory and practice of self-authorship development.

The next section will converge the topic of how self-authorship is developed with implications for clinical learning in athletic training. In doing so, self-authorship will be presented as a conceptual framework for understanding and advancing learning, especially clinical learning, in athletic training education.

Implications for clinical learning. Drawing on previous research regarding professional socialization in athletic training (Klossner, 2008; Mazerolle, Bowman, & Dodge, 2014; Mazerolle, 2014a; Mazerolle, 2014b; Pitney, Ilsley, & Rintala, 2002; Pitney, 2002) and reiterating the CAATE's standard noting, "Clinical education must provide students with authentic, real-time opportunities to practice and integrate... behaviors required of the profession in order to develop proficiency as an Athletic Trainer" (p. 7), self-authorship can serve as a conceptual framework for understanding and advancing clinical education.

Clinical skills athletic training students learn are a collection of interrelated and interdependent competencies (Amato, Konin, & Brader, 2002). These competencies require a student to have complex understanding and ability to apply various competencies to manage even the most entry-level responsibilities. An integral part of

their ability to master clinical competencies is learning, internalizing, and enacting the affections, values, beliefs, and dispositions of the certified athletic trainers (Dinmohammadi, Peyrovi, & Mehrdad, 2013; Price, 2009).

Becoming properly socialized into the profession can aid the student in more than simply organizing life experiences and his or her identity. It requires and supports advanced cognitive appraisal and behavioral enactment of intrapersonal identity, interpersonal identity, and metacognition. These ways of knowing are imperative for the student to optimally navigate the complexities of practicing as a healthcare provider. The student, through a process of socialization in his or her clinical education experience, should become able to *author* meaning of him or her and the surrounding world—this is self-authorship in athletic training education.

In knowing the importance of proper socialization and its enablement of self-authorship, athletic training educators and preceptors must work to provide clinical education environments which foster development of the student in this affective domain. Mazzerole, Bowman, and Dodge (2014a) support the use of structured, facilitated activities in an athletic training curriculum to integrate students into the roles and expectations of the program and profession. The authors recommend the use of an introductory course combined with observation hours. This allows students to begin learning, first hand, the responsibilities and affections of practicing athletic trainers before embarking on the rest of the coursework and clinical experiences. From this introductory and observation experience, a student can begin, whether knowingly or not, authoring his or her world and place within.

Moreover, formal orientation sessions, student handbooks, participation in an athletic training student club, and organized peer mentoring are recommended as additional ways athletic training programs can facilitate socialization among students (Mazerolle, 2014a). Here, parallels between socialization and self-authorship can be drawn. Both processes depend on learning experiences that support meaning making. For students to do so, they must be engaged in learning environments which are developmental in nature, or as Baxter Magolda (1999) would describe, they must be transitional cultures. This environment should be one where, “diverse cultural resources allow for the fashioning of new identities within existing configurations of power” (Giroux, 1992). Thus, a model environment for athletic training students clinical experiences is one, as Giroux (1992) and Baxter Magolda (1999) support, where the students are challenged to redefine their epistemological, intrapersonal, and interpersonal worlds—this is the learning partnership model (Baxter Magolda & King, 2004) in athletic training.

The previous section demonstrated connectedness between self-authorship development and implications for clinical learning in athletic training. Self-authorship was presented as an additional framework for athletic training educators to understand and promote learning, especially clinical learning, among athletic training students. The discussion now shifts to highlighting more broad topics surrounding self-authorship development. Specifically, the next section will illuminate what the current body of literature says regarding self-authorship development in various student populations.

Self-authorship development in various populations. This section will examine how self-authorship is developed and how such development may be influenced by

demographic characteristics such as ethnicity, gender, and student risk-profile.

To begin, it must be reiterated that developing self-authorship is a complex process. It is initiated and occurs in various forms for each individual. Thus, it is not appropriate to assume self-authorship develops in the same fashion for all individuals. Development of self-authorship, however, does tend to occur in an evolving progression from reliance on externally defined beliefs, affections, identity, and epistemic assumptions to internal definitions of the same. Specifically, Baxter Magolda (1992) described four consistently emerging phases in the process—(a) following external formulas, (b) the crossroads, (c) becoming author of one's life, and (d) internal foundation.

As there exist innumerable journeys one can take toward self-authorship and no all-encompassing model can or should be prescribed, it can be speculated that the journey toward self-authorship varies depending on individual characteristics including but not limited to one's gender, ethnicity, and risk profile. Baxter Magolda's (1992) original research of the self-authorship phenomenon was conducted on White male and female students from one selective, public, regional university in the Midwest. While this is not problematic in and of itself, it threatens the external validity of much of the self-authorship discourse. Pragmatically, having minimally generalizable understanding of the self-authorship construct presents challenges for educators seeking to predict, promote and assess self-authorship among students from diverse backgrounds. As such, the ensuing section will review and analyze the limited literature pertaining to self-authorship development among students of various demographic characteristics including ethnicity, gender, and risk profiles.

Ethnicity. Much of the current data informing the discourse of self-authorship has been collected on White students (Torres & Hernandez, 2007). It should be noted this is not necessarily problematic. It does, however, challenge the generalizability of the self-authorship discourse to students from diverse backgrounds. Other authors, however, employed a constructivist approach to inquiry and grounded theory methodology to study the influence of cognitive development on ethnic identity development in a sample of Latina/o college students (Torres & Baxter Magolda, 2004).

Semistructured interviews were conducted over the course of subjects' (n=28) college careers. Findings from these authors' work demonstrated intimate relationships between the students' cognitive, intrapersonal, and interpersonal dimensions of development (Torres & Baxter Magolda, 2004). Data collected from the interviews revealed subjects' narratives being told and framed in the three dimensions of self-authorship. This finding led the authors to conclude the interdependence of maturity in one dimension with its two adjacent dimensions. In other words, when maturation occurs in one dimension, it influences the same in one or both of the other dimensions.

Participants in Torres and Baxter Magolda's (2004) study, much like the typical continuum of phase development of self-authorship, began their college experiences relying on external authorities to inform their intrapersonal, interpersonal, and cognitive dimensions. However, and specific to this sample of Latina/o students' intrapersonal development, it was demonstrated that these students were internalizing or actively coping with externally prescribed stereotypes of Latina/os. One participant noted her lack of belief in her ability to succeed in college because of her accent and level of English proficiency. Another student noted her intentionality to behave in ways that

ensured others' stereotypes would not apply to her.

This particular finding is worrisome as it demonstrates the harmful effect stereotypes can have on healthy intrapersonal development of students from underrepresented groups. The real and perceived existence of stereotypes threatened these students' intrapersonal development by prescribing externally defined behaviors and affections unto the student. Similarly, stereotypes threatened intra- and interpersonal identity development by provoking enactment of an identity that was an *act* aimed at satisfying others' expectations, rather than enacting self-authored and authentic affections and behaviors. It also demonstrates the importance and necessity for complex meaning-making capacity (i.e., self-authorship) for students who, unfortunately, will have to face undeserved disadvantages in their journeys through school, life, and work.

Observing successful professionals with accents on campus and successfully earning a scholarship were artifacts which stimulated movement into a crossroads phase and diminishing vulnerability to externally defined formulas for the students. These artifacts, in fact, empowered and improved the participant's self-efficacy. Moreover, being encouraged by family, loved ones, and instructors to interact with others from different backgrounds, question authority, and engage in reflective behaviors (journaling, for example) were artifacts that further stimulated crossroads and challenging of previously accepted external formulas. Although the generalizability of this study's findings has limitations, these findings are important because they reveal where educators and researchers might focus efforts when attempting to create environments that stimulate and harbor self-authorship development among students from diverse backgrounds. To summarize, Torres and Baxter Magolda's (2004) work demonstrates a

process of maturation in the cognitive dimension, leading to complex meaning-making capacity, which resulted in cognitive dissonance and decreased susceptibility to stereotype vulnerability that gave rise to internal construction of participants' intra- and interpersonal identities (p. 345).

Other authors (Torres & Hernandez, 2007) have found Latina/o students displaying much of the same nuances of self-authorship development as the students in Baxter Magolda's (1992) original work. However, and similar to what Torres and Baxter Magolda (2004) revealed, Torres and Hernandez (2007) support Latina/o students having "additional developmental tasks that are not included in the study of all White students" (p. 561). Discerning the meaning of societal images of Latina/os as positive or negative (p. 564), overcoming self-consciousness of differentiating characteristics (e.g., a speaking accent) (p. 567), and assimilating to majority-culture while avoiding dismissal of one's familial and cultural identity (p. 568) were examples of additional tasks the Latina/o students had to overcome in their development of self-authorship phases.

Until this point, the discussion has regarded White students and Latina/o students. To date, there exist no literature specifically aimed at analyzing self-authorship development among other ethnic groups, such as Black students. While research has not been specifically aimed at self-authorship among Black students, researchers have investigated intra- and interpersonal development among the group.

Few differences exist between White and Black undergraduate female students' development of autonomy and interpersonal relationships, where both groups of students tended to develop in the intra- and interpersonal dimensions simultaneously (Taub & McEwen, 1991). Other authors, however, support Black students having to face

additional tasks in their journeys toward intra- and interpersonal development (Parham, 1989)—similar to such findings of Latina/o students (Torres & Baxter Magolda, 2004; Torres & Hernandez, 2007). Parham (1989) suggests Black students being faced with having to determine how much and in what way(s) to endorse Afrocentric and/or Eurocentric characteristics in their identity. Black students must also work to make meaning of others' perceptions of them as African Americans—adding an additional task in their journey toward intra- and interpersonal maturity (Parham, 1989). From these findings, one can posit there to be innumerable nuances of development in all three dimensions of self-authorship for all students. One might also posit that students from minority groups may face additional tasks in their journeys toward mature intrapersonal identities, interpersonal identities, and epistemic assumptions.

This section has analyzed current literature pertaining to ethnicity-related differences in self-authorship development. It has, specifically, demonstrated the journey toward self-authorship having variation for Latina/o, White, and Black students. Although all students display congruency in some self-authorship characteristics, Latina/o and Black students tend to have additional developmental tasks to overcome as they journey toward self-authorship.

While still unclear in the literature, the additional tasks are posited to be result of their Latina/o and African American identities, cultures, and experiences (Baxter Magolda, 2004; Parham, 1989; Torres & Torres & Hernandez, 2007). Such findings are important as they reveal the necessity for more research to be directed toward ethnicity-related differences in self-authorship—especially research oriented toward students from various other ethnic backgrounds. This section has also revealed the necessity for

institutions to examine their environments for attributes that facilitate and/or inhibit self-authorship development among students from all backgrounds, including diverse and underrepresented groups. Institutions should, however, proceed with such actions cautiously as there are inevitably intra- and inter-student and intra- and inter-institutional nuances which influence the development of self-authorship.

Gender. Using a mixed methods approach, Creamer and Laughlin (2005) aimed to explain career decision-making processes of women using self-authorship as a theoretical framework. Quantitative survey data was collected from 117 female college students, while 40 female college students were interviewed to glean qualitative data. Approximately 47% of the college women who participated in the study self-identified as racial or ethnic minorities. Quoting Baxter Magolda's (1998) description of self-authorship as "the ability to collect, interpret, and analyze information and reflect on one's own beliefs in order to form judgements" (p. 143), the authors (Creamer & Laughlin, 2005) developed an argument of the connectedness between decision making and the complex meaning-making processes associated with self-authorship. As such, the dimensions and phases of self-authorship were used to analyze and describe findings from their research.

Overall, Creamer and Laughlin's (2005) findings demonstrated that self-authorship is a relevant construct informing and impacting the career decision making process among a sample of traditional college-aged females. Also, findings demonstrated parents to be major influencers for career decisions among the female participants. Although the authors did not intend to label their participants as exhibiting a specific phase of self-authorship, it is important to note that reliance on parents for career

discernment illustrates these participants' reliance on an external authority. This is an important finding as individuals (males or females) may be unable to make internally directed decisions to pursue a sex-atypical career choice without exhibiting self-authorship.

In addition to these findings, the authors concluded that women viewed parents as more authoritative in their career decision making than academic or career advisors. While this may seem odd to some and appropriate to others, it indirectly illustrates this sample of female college students' inability to negotiate diverse viewpoints—another emblem of immature levels of self-authorship.

This section has analyzed current literature pertaining to gender-related nuances in self-authorship development. It has, specifically, demonstrated the journey toward self-authorship having variation for female students in relation to their career decision making processes. The findings of Creamer and Laughlin's (2005) work reveals the importance for educational practitioners and researchers focusing efforts on creating environments to facilitate and support self-authorship among women. Not only may doing so foster self-authorship development among female students, it may serve as a meaningful, systemic means of facilitating advancement of women in sex-atypical fields such as science, technology, engineering, and math.

Student risk-profile. High-risk students are those with academic backgrounds, prior performances, or personal characteristics that may contribute to inadequate academic performance and/or withdrawal from college (Choy, 2002; Pizzolato, 2003). Although these students may enter the college arena with comparable commitment and aspirations as their lower-risk counterparts, they have more potential constraints to

achieving in the academy (Pizzolato, 2003). It is this high-risk population of students that will be the focus of the ensuing section regarding self-authorship development.

High-risk students may begin their journeys toward self-authorship before entering college (Pizzolato, 2003). This notion is in contrast to what current discourse would support regarding self-authorship, as it is thought self-authorship is unlikely to mature before adulthood (Baxter Magolda, 2001b; Kegan, 1994). Adding to the confounding evidence against students self-authoring before college are findings from developmental psychology noting adolescents predominantly enacting behaviors in effort to fit in with peers (e.g., reliance on external formulas), instead of practicing internally defined affections and actions (Grotevant, Damon, & Eisenberg, 1998; Kiesner, Cadinu, Poulin, & Bucci, 2002). However, in communities where, sadly, academic excellence and college readiness are rare, an anomaly of students may internalize such achievements as crossroads—causing them to be provoked into beginning stages of self-authoring their desires and future selves (Manaster, Chan, & Safady, 1992; Milner, 2002).

These high-risk students' development of self-authorship and resultant journey toward college aspirations may not be received well in their particular locale. For example, it has been noted that Black students desiring to attend college may experience ridicule and marginalization for "acting White" (Milner, 2002). Thus, in some high-risk students, the simple act of desiring college attendance becomes the turning point where they necessitate developing internal formulas (Grotevant, Damon, & Eisenberg, 1998; Kiesner, Cadinu, Poulin, & Bucci, 2002) and liberating themselves from the external formulas surrounding them in their home and/or communities (Pizzolato, 2003). This not only demonstrates pre-collegiate self-authorship development but it reveals additional

tasks students characterized as “high-risk” may face in their journey toward self-authorship.

Pizzolato (2003) investigated self-authorship among high-risk students (n=35) and confirmed the aforementioned notions that these students in fact demonstrated, although at varying levels, self-authorship prior college. Following external formulas led some of the participants to *disequilibrium*. For example, experiencing violent crimes, being arrested, and observing peers become pregnant were self-authorship provoking experiences that led participants to disequilibrium and consideration of more internally defined aspirations for themselves.

Participants varied in their levels of achieved internal foundations—this was dependent on their level of college admissions privilege (Pizzolato, 2003). Here, college admissions privilege refers to having high privilege (e.g., not having to figure out how to apply or fund college) and low privilege (e.g., having to navigate the application and funding of college). Students who, for example, were awarded athletic scholarships demonstrated lower levels of internal foundations prior to entering college. This was due to the process of applying for and being inducted into college being handled, predominantly, by someone other than the student (i.e., a coach, athletic director, etc.). Reliance on external authorities to carry out the logistics of “going to college” failed to stimulate construction of internal foundations for these high-privilege, high-risk students, although they would progress toward and through that phase of self-authorship later in their collegiate experiences. One can imagine, then, students with low college admissions privilege demonstrated pre-college development of internal foundations. This maturity was provoked by there being no readily accessible external formula for them to rely

throughout the college decision, application, and induction process.

The findings of Pizzolato's (2003) work reveal the effect of variables including high-risk characterization, life disequilibrium, and college admissions privilege on self-authorship. The journey toward self-authorship necessitates more than a cognitive willingness and aptitude to think for one's self. It requires provocation from life experiences, where a lack of privilege may serve as a mediator. Despite having limitations, Pizzolato's (2003) work iterates the importance for educators, researchers, and institutions further examining self-authorship experiences and levels of students. Furthermore, best practices may be worked toward to enable high-risk students' transition to college and journey toward self-authorship. Such practices may not only promote self-authorship development among high-risk student populations, they may aid academic achievement and persistence of this population, as well.

Summary. The limited exploration of educational theory and pedagogical views of clinical learning in this section must be acknowledged. Nevertheless, prominent and relevant educational theories, learning over time (Feiman-Nemser, 2001), professional socialization (Mazerolle, 2014a), and predominantly, self-authorship (Baxter Magolda, 1999) were presented as underlying athletic training clinical education. These theories were demonstrated as frameworks for understanding the clinical component of athletic training education and views of clinical learning. Moreover, the development of self-authorship was discussed and in relation with curricular and pedagogical techniques, athletic training education, and self-authorship development among demographically different populations. It should be concluded and summarized that no all-encompassing developmental journey toward self-authorship or prescription for promoting self-

authorship development is possible or appropriate. However, its tendency remains evolutionary in nature and anchored around development of the four phases—reliance on external formulas, crossroads, becoming author, and internal foundation.

The ensuing section will iterate the significance of directing research efforts toward self-authorship as a lens to view the educational preparation and practice of athletic training. The ensuing section will also analyze self-authorship's capacity to inform athletic training educational practices to improve development of entry-level professionals and mitigate systemic issues in the field including burnout and professional commitment.

Significance and Relevancy of Self-Authorship in Athletic Training

Athletic training students who have successfully progressed in their journeys toward self-authorship, become most able to integrate classroom knowledge, skills, and clinical abilities. Moreover, the self-authored athletic training student and practitioner effectively enact clinical discernment and professional behaviors required of the profession in order to deliver the highest order of humanistic healthcare. The following section will illustrate the applicability of self-authorship in framing and addressing specific issues beginning with the issue of *turnover* in the athletic training workforce and educational settings. A discussion of turnover will transition into using self-authorship as a framework to inform issues of professional identity development, levels of professional and academic commitment and patient-care.

Systemic Approach to Issues in the Field

Turnover. One issue in the field is that of turnover. Findings from previous authors reveal saturation of the athletic training workforce with early career professionals

who will tend to leave the profession in the ensuing decades of life (Kahanov & Eberman, 2011). Declines in the athletic training labor force generally occur for males and females in their late 20s and early 30s. Female presence in the workforce, particularly, declines between ages 28 and 35 years old, while male presence declines after early 40s. Thus, it is this phenomenon of turnover that is occurring in the athletic training workforce and deserves further examination.

Retention, or avoidance of student turnover, in professional athletic training degree programs has been of concern as well (Bowman & Dodge, 2011; Dodge, Mitchell, & Mensch, 2009; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012). While precise retention rates for athletic training students remain undocumented, general retention rates among college students range between 59% (National Center for Education Statistics, 2015) and 67.6% (ACT, 2014) across all institution types. Such retention rates reflect the inevitable challenges students face in their pursuit of degree attainment; thus, educational programs are charged with the responsibility of supporting students' persistence toward graduation. Students who persist are reaching their academic and, presumably later, career goals. Therefore, retaining students in any degree program, including athletic training, serves as a proxy indicator of programmatic and student experiential quality.

As turnover is a concern in athletic training workforce and educational settings, it has become a topic of examination among prominent voices in the field (Bowman & Dodge, 2011; Dodge, Mitchell, & Mensch, 2009; Goodman et al., 2010; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012). Previous findings reveal practicing athletic trainers remaining committed, and presumably retained, in their roles when they are satisfied with their jobs, receive adequate financial benefits, and experience minimal

work-life and work-family conflict (Goodman et al., 2010; Mazerolle, Bruening, & Casa, 2008; Mazerolle, Bruening, Casa, & Burton, 2008). Similarly, athletic training students remain committed and retained when they experience positive interactions with faculty and clinical preceptors (Bowman & Dodge, 2011). Moreover, enrollment in an athletic training program with a familial culture and having interest in the didactic and clinical learning experiences stimulate commitment and persistence among athletic training students (Bowman & Dodge, 2011).

Professional identity, commitment, and patient care. Most importantly, for the purposes of this study, is the finding that development of a professional identity is an additional and major contributing factor to students' intention and commitment to their academic program and the profession following graduation (Bowman & Dodge, 2011). It is important to note that students' development of professional identities occurs through engaging, meaningful, reasonably time-consuming, and integrative clinical education experiences—thus, these same factors facilitate their commitment to academic and professional roles (Bowman & Dodge, 2011; Dodge, Mitchell, & Mensch, 2009). Therefore, it may be speculated that because self-authorship so intimately involves the student's (and later the professional's) construction and enactment of intra- and interpersonal identities, it can be viewed as a developmental outcome, which, if successfully achieved, may enhance a student's and professional's levels of intention toward and commitment to the profession—thereby mitigating turnover.

Many of the contributing factors and effects of inadequate professional commitment among practicing athletic trainers and athletic training students are complex to measure. However, turnover of professionals and students serves as one proxy

indicating professional commitment levels. As such, it can be posited that an inability to retain individuals in any profession, resulting in high turnover rates, generally demonstrates a body of professionals having inadequate commitment to the profession. Moreover, high turnover tendencies in a profession will have negative consequences for healthy growth, interprofessional reputation, and future political and economic advancement in the highly competitive healthcare marketplace. Low levels of commitment may also be fueled by high levels of burnout which has its own additional and negative consequences including practitioners' feelings of being emotionally exhausted, calloused toward patients, and having little sense of personal accomplishment (Leiter & Maslach, 1988; Maslach & Jackson, 1984; Maslach, Jackson, & Leiter, 1986; Maslach & Jackson, 1981). Most importantly, athletic training must gain advanced understanding of systemic *commitment-enhancing* approaches to education and practice in an effort to avoid burned out and uncommitted professionals' delivery of insufficient patient-care.

Having such economic and humanitarian interests in mind, athletic training will necessitate investigating ways to facilitate affective development of professional commitment among students and practitioners—this is where facilitating development of meaning-making capacities and self-authorship among athletic training students may help systemically enhance professional commitment among new entrants to the field.

As demonstrated in the previous sections, it is imperative for the profession of athletic training to gain advanced understanding of systemic commitment-enhancing approaches to education and practice. By doing so, specific issues such as burnout, inadequate levels of professional and academic commitment, and patient-care may be

addressed. In addition to addressing specific issues in the field, it is important to reveal how focusing research efforts toward enhancing educational practices may advance educational priorities and create progress in the field of athletic training.

Advancing Educational Priorities

In the previous section, specific issues such as turnover, inadequate levels of professional and academic commitment, and patient-care were discussed as self-authorship may be an unexplored lens for athletic training to understand and mitigate such issues. The ensuing section, however, will further demonstrate the importance and relevancy of focusing athletic training educational research efforts toward the construct of self-authorship. More specifically, the following section will illustrate how self-authorship is a construct that, after being understood and applied, may move the field toward achievement of priorities set forth by nationally recognized educational organizations and strategic educational priorities of the profession.

Common priorities for 21st century education. In its charge to colleges and universities to prepare students for integrative and applicable learning, the Association of American Colleges & Universities (AAC&U) supports the virtues and employment of liberal education. The AAC&U supports that through liberal education, students develop understanding of and abilities to manage “complexity, diversity, and change” (AAC&U, 2015, p. 1). In addition to gaining the cognitive and psychomotor skills of a specific discipline, liberal education can aid students in their development of transferable skills—communication, evidence-based reasoning, problem solving, and application of skills in real-world contexts (Association of American Colleges & Universities, 2015). Hence, a goal for all students of higher education is to not only gain discipline-specific skills for

21st century occupations, but be capable of navigating the complexities, diversities, and changes associated with the real world (Association of American Colleges & Universities, 2015). These skills, traits, and virtues are quite similar to those embodied by learners who have developed meaning making capacities and self-authorship. In particular interest to this study, such developmental achievements underlie the science and art of practicing healthcare, including athletic training.

Priorities of athletic training education. Similar educational goals have been echoed by prominent voices in athletic training. In his keynote presentation at the 2015 Athletic Training Educator's Conference, Dr. Dave Perrin urged athletic training educators to seek integrative, high-impact educational practices to prepare future athletic trainers. He iterated the AAC&U's findings that employers value critical thinking, communication, problem-solving, and innovation skills among potential new hires. He further speculated employers of athletic trainers share in such feelings (Association of American Colleges & Universities, 2015; Perrin, 2015).

In addition to Dr. Perrin's address, evidence of the importance and relevancy for research directed toward advancing athletic training education comes from the National Athletic Trainers' Association (NATA). The Executive Committee for Education (ECE), a committee within the NATA, is responsible for and has set strategic educational priorities for the field. These priorities are intended to "improve, advance and/or enrich an athletic trainer's lifelong educational journey, as well as our profession's standing as a whole" (Del Rossi, 2015). Five strategic priorities for athletic training education put forth by the ECE in 2015 include (a) enhance professional education; (b) enhance transition to practice; (c) develop clinical experts; (d) create mechanisms for advanced practice

leadership; and (e) serve as stewards of the discipline (Del Rossi, 2015). While each of the priorities is important, Priorities 1 and 2 provide schemas about which research directed toward meaning making and self-authorship can be situated. Gaining understanding and improved application of pedagogical practices would support enhancement of professional education and students' preparation for workforce entry. It must be acknowledged that there may not necessarily be something wrong with the current mode of athletic training education delivery or with current processes for transitioning students into the workforce. However, the challenge for all professions is pursuing ongoing improvement and understanding of educational and preparatory practices.

The latter sections demonstrate the importance and relevancy of focusing athletic training educational research efforts toward the construct of self-authorship. In addition to serving as a means to systemically address issues of professional commitment, burnout, and turnover, self-authorship is a construct that moves the field toward achievement of priorities set forth by nationally recognized professional organizations and strategic educational priorities of the field.

The discussion will shift in the next section to discussing approaches to studying self-authorship. Situated appropriately after the previous thematic review of literature surrounding it, this section will reveal various methodological threats and opportunities associated with studying self-authorship. Following a discussion of the methodological threats (i.e., challenges) and opportunities for studying self-authorship, a summary of the literature review chapter will be provided, followed by a roadmap for Chapter III—Methods.

Threats and Opportunities Surrounding the Study of Self-Authorship

As noted previously, self-authorship is extremely complex. Its constructive-developmental nature, variability, and nonlinearity, for example, create formidable challenges for it to be assessed. The following section will review literature pertaining to methodologies used to assess the construct of self-authorship. Within the review, challenges and opportunities for assessment will be highlighted. This review of assessment literature will end with an explanation and review of the instrument for assessing self-authorship in the current study.

Challenges

The foremost challenge in assessing self-authorship is accessing the complex meaning-making structures of participants. In effort to explain this challenge, one must first understand the difference between the *structure* and *content* of a thought. The content of an individual's thought refers to *what* he or she thinks, while the structure refers to the *reason or justification* for thinking it (Creamer et al., 2010). For example, two individuals may share in their thought that marijuana should be legalized. In this case, the two individuals share the same thought, thus the same thought content. If they were to be assessed by being asked what they think about legalizing marijuana, an examiner would characterize the two individuals into the same group. Unfortunately, however, knowing the content of someone's thought does not reveal underlying structure of how that thought came to be. So, in the case of the two individuals, one may support legalization of marijuana because she is a marijuana user and wants easier access to the product, while, the other individual may be a community member who believes legalization of marijuana would decrease gang and crime activity in the neighborhood. In

this sense, the two individuals, although having the same content, had very different structures (e.g., reasons and justifications) for their thoughts. Although using the “legalization of marijuana” as an example has little to do with athletic training or higher education, it serves as a provocative current issue to simulate and conceptualize the relationship between thought content and structure.

Because the goal of assessing self-authorship is assessing complex meaning-making, it becomes difficult to dissect individuals’ thought structures. The goal is, ultimately, to determine if individuals are using self-authored structures to think. This challenge presents itself regardless of the methodology employed. Nonetheless, researchers of self-authorship have traditionally chosen to use qualitative methods (e.g., open-ended interviewing) to extract the rich, complex meaning-making structures interviewees use to reason and respond throughout interview dialogue (Baxter Magolda & King, 2012).

An additional challenge present in assessing self-authorship is observing and organizing the variable and evolutionary nature of thought structures across dimensions. In other words, an individual may have self-authored thought structures in the epistemological domain but not in the intra- and interpersonal domains. Similarly, one may not consistently exercise self-authored thought structures within or between domains. He or she might use a self-authored structure to discern a career choice in one conversation but not the next conversation, one month later. As such, it becomes challenging for such variability and evolutionary nuances of the complex meaning-making structures of self-authorship to be observed (Baxter Magolda & King, 2012). Unsurprisingly, one can presume an additional challenge in the assessment of self-

authorship is the skill and experience level of the examiner.

Another challenge posed by assessing self-authorship is that the process of meaning-making is highly contextual. For example, when an individual experiences an event, such as a provocative discussion within a seminar course, the event itself is rendered *meaningless* until it is *made sense of* by the individual (Kegan, 1982). In fact, previous authors have argued the individual is the context for meaning-making (Kegan, 1982). It is supported, then, that various personal characteristics including race, sexual orientation, gender, faith orientation, and ethnicity can influence the context about which meaning-making (i.e., thought structures) occur (Abes, Jones, & McEwen, 2007; Baxter Magolda, 2009; Torres, 2010). It is this contextual (personal and environmental) nature of self-authorship that renders observation of self-authored thought structures challenging.

Opportunities. The previous section revealed challenges present in the assessment of self-authorship. Such challenges included accessing the complex meaning-making structures of participants, observing and organizing the variable and evolutionary nature of thought structures across dimensions, adequate skill and experience of an examiner, and accounting for the highly contextual nature of the phenomenon. While these challenges impede the ease of assessing self-authorship, they more so indicate opportunities and areas for researchers to exert increased attentional and procedural focus in the research process.

Most importantly, assessment of self-authorship should be aimed at understanding thought structures. Furthermore, assessment should account for (e.g., observe, record, and consider) personal and environmental contexts within which participants respond to

questions. Assessment of self-authorship is also best conducted by a researcher or practitioner with adequate theoretical understanding of the construct and experience assessing it.

The following section will review literature pertaining to methodologies used to assess self-authorship. This review of assessment literature will end with a discussion of the method and instrument for assessing self-authorship in the current study.

Assessment methods. Assessing self-authorship has its origins in assessing moral and epistemological development. An essay questionnaire referred to as the Sociomoral Reflection Measure (Gibbs, Widaman, & Colby, 1982) represented an early “paper-and-pencil” survey instrument aimed at measuring participants’ levels of moral development. The Sociomoral Reflection Measure was a good instrument in the sense that it required participants to explain their reasoning (e.g., structure) for responses to items. Attempting to assess moral judgement, Rest (1979) developed the Defining Issues Test. In this paper-and-pencil assessment, participants were asked to discern important aspects of a moral dilemma, at which point their performance was scored and categorized into various levels of moral judgement (Rest, 1979). Other authors seeking to observe epistemological development developed the Measure of Epistemological Reflection (Baxter Magolda & Porterfield, 1985). This, too, was a paper-and-pencil, short-essay instrument procedure.

The aforementioned methods of measuring moral and epistemological development, naturally, had benefits and challenges. As the intention of this study was not to measure moral or epistemological development, per se, in depth, analyses of the measures will not be included here. However, these few measures exist as the early beginnings of what would later become assessment of self-authorship.

Efforts to directly measure the self-authorship construct are recent. The earliest methods of assessing self-authorship were qualitative in nature. Face-to-face interviews, for example, have been the hallmark for assessing the phenomenon and employed by numerous researchers (Baxter Magolda & King, 2007; Creamer & Laughlin, 2005; Pizzolato, 2003; Pizzolato, 2007; Torres & Baxter Magolda, 2004; Torres & Hernandez, 2007). Different than the early attempts to measure moral and epistemological development using pencil-and-paper surveys, the face-to-face interview process enables an intimate exchange of meaningful information between interviewer and interviewee. This exchange allows the miniscule nuances of interpersonal engagement to allow the researcher assessment of interviewees' meaning-making structures (Baxter Magolda & King, 2007). Unfortunately, though, face-to-face interviews present burdens of time for interviewer and interviewee. Furthermore, even after completion of an interview, an interviewer must spend a great deal of time transcribing and coding data for analysis. Aside from the time demands, an interviewer must be skillful and experienced to effectively engage an interviewee and extract data which accurately reflect the individual's meaning-making structures. To that end, one can see the advantages and disadvantages of assessing self-authorship using qualitative methods. One may also understand, then, why researchers have worked toward establishing quantitative, reliable, and efficient ways to assess self-authorship.

Attempting to explicitly and quantitatively measure self-authorship has burgeoned in the last decade (Baxter Magolda & Porterfield, 1985; Baxter Magolda & King, 2007; Creamer & Laughlin, 2005; Pizzolato, 2003; Pizzolato, 2007; Torres & Baxter Magolda, 2004; Torres & Hernandez, 2007). The first quantitative measure was a 24-item, pencil-

and-paper instrument called the Self Authorship Survey (Pizzolato, 2007). In this survey, participants responded to Likert-type items indicating levels of agreement with items' reflection of their typical ways of thinking. The survey items comprised four subscales including capacity for autonomous action, problem solving orientation, perceptions of volitional competence, and self-regulation in challenging situations. Collectively, these four subscales are intended to measure a respondent's level of self-authoring thought structure (Pizzolato, 2007).

What is unique about the Self-Authorship Survey is that it is only one part of a two-part questionnaire. The other half of the questionnaire is the Experience Survey. The Experience Survey required respondents to compose narratives of important decisions they have made. A series of prompts within the Experience Survey instrument facilitated respondents' composition of illustrative narratives that would provide usable data.

Scores from the Self-Authorship Survey and the Experience Survey were intended to be computed in such a way as to provide a quantitative representation of the individual's self-authorship level. However, for such a computation to occur, the two surveys must have demonstrated statistical relationship. Unfortunately, the correlations between scores and codes on the Self-Authorship Survey and Experience Survey were only moderately correlated (Pizzolato, 2007). As such, the author's hypothesis that the two measures could, collectively, be used to assess self-authorship remained questionable and further research was necessary.

At this juncture in the evolution of assessment measures for self-authorship, further work on a reliable and efficient instrument to measure self-authorship arose. Researchers developed a new measure for self-authorship (Creamer et al., 2010) referred

to as the Career Decision Making Survey-Self Authorship (CDMS-SA). The CDMS-SA will be explained and analyzed in detail throughout the following section, as it is the instrument employed in this study.

The CDMS-SA is composed of select items from the Career Decision Making Survey (CDMS), originally developed by researchers studying the process of high school and college students' discernment of careers in information technology (Creamer et al., 2010).

Measures. Twenty-eight items in the original CDMS survey make up one of its sections referred to as “Diverse Viewpoints and Decision Making.” Seventeen of these items have been teased out and demonstrated to be valid and reliable measures of the various phases and dimensions of self-authorship (Creamer et al., 2010). Items within the CDMS-SA (Creamer et al., 2010) instrument are answered by participants using a 4-point Likert-type scale. Responses include 1 (disagree), 2 (slightly disagree), 3 (slightly agree), and 4 (agree). Items within the CDMS-SA (Creamer et al., 2010) are similar to those in other instruments used to measure self-authorship including the Measure of Epistemological Reflection (MER) (Baxter Magolda & Porterfield, 1985; Baxter Magolda, 2001a), but the CDMS-SA items provide a more holistic measure of the self-authorship phenomenon (Creamer et al., 2010). For the purposes of this study, the CDMS-SA (Creamer et al., 2010) was transcribed into web-based survey software and disseminated to participants. All items and response selections remained as they would in the “paper-and-pencil” CDMS-SA.

Validity and reliability of the instrument. The following paragraphs will continue discussing the CDMS-SA (Creamer et al., 2010) but explicate evidence of its

validity and reliability. To begin, evidence of the CDMS-SA's validity is presented and demonstrates correlation between self-authorship dimensions and phases as measured by the instrument. Following this, evidence will be discussed to demonstrate the instrument's ability to reliably measure the dimensions and first three phases of self-authorship.

Correlations between the dimensions of self-authorship (e.g., interpersonal, intrapersonal, and epistemological) are theorized to be intertwined instead of mutually independent of one another (Creamer et al., 2010). The following correlations demonstrate confirmation of an assumption that the dimensions of self-authorship are related.

The interpersonal dimension of self-authorship is significantly correlated to the intrapersonal dimension ($r = .706, p < .001$), the intrapersonal dimension is significantly correlated to the epistemological dimension ($r = .654, p < .001$), and the epistemological dimension is significantly correlated to the interpersonal dimension ($r = .809, p < .001$) (Creamer et al., 2010). These correlations support the notion that the epistemological dimension, having the strongest correlation to the interpersonal dimension, leads development in the other dimensions. Moreover, the correlations support theoretical propositions that there is consistency between an individual's epistemological, interpersonal, and intrapersonal development. In other words, if an individual is progressing in his or her epistemological dimension (e.g., views about the nature of knowledge), he or she is most likely progressing toward internally defined intra- and interpersonal identities, too.

The phases of the journey toward self-authorship include external formulas (Phase 1), crossroads (Phase 2), early self-authoring (Phase 3), and internal foundation (Phase 4). These phases are theorized to occur in sequence, whereby an individual progresses through the sequence upon achievement of each consequential phase (Creamer et al., 2010). One may regress in his or her journey through the phases but this is believed to be temporary (Creamer et al., 2010). It is also believed that regression tends not to exceed beyond the immediately preceding phase (Creamer et al., 2010).

The CDMS-SA (Creamer et al., 2010) is validated only to measure the first three phases of the self-authorship journey. A weak but statistically significant, positive correlation exists between Phase 1 and Phase 2 ($r = .369, p < .001$). The correlation between Phase 2 and Phase 3 is stronger and positive ($r = .888, p < .001$). Correlation between Phase 1 and Phase 3 is weak but positive ($r = .298, p < .001$). The correlations among the phases indicate there to be a greater conceptual leap experienced by an individual when he or she transitions from Phase 1 to Phase 2, than the leap from Phase 2 to Phase 3 (Creamer et al., 2010).

The scales in the CDMS-SA (Creamer et al., 2010) instrument also reliably measure the dimensions and phases of self-authorship. The CDMS-SA (Creamer et al., 2010) is reliable, for example, at measuring the intrapersonal dimension and the third phase of the self-authorship journey (i.e. early self-authoring phase). Reliability of measuring the epistemological ($\alpha = .595$), interpersonal ($\alpha = .614$), and intrapersonal ($\alpha = .713$) dimensions range from low to moderate (Creamer et al., 2010). Similarly, the instrument's reliability of measuring the external formulas ($\alpha = .58$), crossroads ($\alpha = .62$), and early self-authoring ($\alpha = .70$) phases of the self-authorship journey are moderately

strong (Creamer et al., 2010).

The CDMS-SA (Creamer et al., 2010) instrument, being the most current, valid, reliable, and efficient measure of self-authorship, was used in this study. In addition to the CDMS-SA portion of the instrument, a section aimed at collecting general and demographic information of participants was included. General and demographic information included, but was not limited to, participants' ages, genders, races and ethnicities, student classifications, and grade point averages. Such information was necessary to better understand the profile of individuals participating in the study as well as to collect data which will inform the third research question guiding the study.

Summary

This section has reviewed the literature pertaining to methodologies used to assess the construct of self-authorship. Within the review, challenges and opportunities for assessment were highlighted, the benefits and confounds associated with qualitative and quantitative measures were discussed, and the instrument used in this study was analyzed. As noted previously, although self-authorship is extremely complex due to its constructive-developmental nature, variability, and nonlinearity, it can and should continue to be examined by researchers and sought in practice by practitioners.

Therefore, this study aimed to add to the current body of educational research surrounding the construct of self-authorship. More specifically and as this literature review revealed no evidence of self-authorship being examined among students studying in professional healthcare degree programs, such as Athletic Training, this study is the first to observe and document self-authorship among this unique student population. The ensuing chapter will consist of the methods used in doing so.

CHAPTER III

RESEARCH DESIGN

Successful journeys, even short ones, require good company.
Marcia Baxter Magolda (2001, p. xv)

This study worked toward building the theoretical and practical understanding of self-authorship in athletic training education. A quantitative research methodology was employed to investigate the complex, multidimensional construct of self-authorship among students enrolled in professional athletic training programs. As such, the ensuing chapter presents the methodology, results, discussion, and conclusions of the study.

Overview

Educational topics such as learning over time (Amato, Konin, & Brader, 2002; Feiman-Nemser, 2001), professional socialization of athletic training students (Dodge, Mitchell, & Mensch, 2009; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012; Pitney, Ilsley, & Rintala, 2002; Pitney, 2002), and student learning styles (Draper, 1989; Harrelson, Leaver-Dunn, & Wright, 1998; Stradley et al., 2002; Thon & Hansen, 2015) are well established in the athletic training education discourse. Enhancements in the professional socialization and transition of students to the field have been fueled by these ways of viewing student development in athletic training. It is acknowledged that educational topics inform professional education of athletic trainers; however, the field's body of knowledge lacks interpretation of athletic training student development through the lens of other psychosocial developmental concepts such as self-authorship.

Self-authorship is characterized as a developmental process whereby external influences and experiences are internally coordinated and relativized. Internal coordination of external experiences leads the learner to assemble his or her foundational affections including his or her beliefs, intrapersonal identity, interpersonal identity, and metacognitive abilities. These developments, along with the learner's newly developed capacity to engage in ongoing meaning-making, serve as the basis for meeting complex demands of school, life, and work.

Self-authorship is important for all individuals, but especially those preparing to become healthcare providers. Just as social issues like poverty, appreciating diversity, and crime (Baxter Magolda, 1999) demand advanced, self-authored thoughts and behaviors in response to the issues, so too does optimal practice in healthcare occupations. Thus, healthcare professionals necessitate integrating cognitive, intrapersonal, and interpersonal dimensions to deliver holistic care to human patients, not just broken bodies.

It becomes apparent, then, why specialized accrediting agencies for professions, such as athletic training, seek to ensure proper development of cognitive, psychomotor, and affective skills of future practitioners. The Commission on Accreditation of Athletic Training Education (CAATE) notes, "Clinical education must provide students with authentic, real-time opportunities to practice and integrate athletic training knowledge, skills, and clinical abilities, including decision-making and professional behaviors required of the profession in order to develop proficiency as an Athletic Trainer" (p. 7). Self-authorship can, arguably, serve as a conceptual framework for practicing and advancing clinical education in healthcare disciplines such as athletic training.

The purpose of this study was to advance the theoretical and practical understanding of self-authorship in athletic training education and empirically determine the extent to which the developmental phases of self-authorship were represented among a sample of athletic training students. As self-authorship is an important developmental achievement enabling practitioners to navigate the complex science and art of delivering healthcare, this study adds to the impetus for athletic training educators to understand, promote, and assess students for self-authored ways of knowing.

The study was guided by the following research questions.

1. What is the relationship (or “level of agreement” (Creamer et al., p. 557, 2010)) between the cluster of survey items intended to measure the dimensions and those intended to measure the phases of self-authorship among a sample of athletic training students?
 - a. Do the results of the study of athletic training students support Creamer’s factor structure of the dimensions of self-authorship?
 - b. Do the results of the study of athletic training students support Creamer’s factor structure of the phases of self-authorship?
2. To what extent are the three developmental phases (e.g., external formulas, crossroads, and becoming author) of self-authorship represented among athletic training students?
3. Do differences exist in the developmental phases (e.g., external formulas, crossroads, and becoming author) and dimensions (e.g., intrapersonal, interpersonal, and epistemological) of self-authorship among independent variables (gender, ethnicity, and student risk-profile)?

Research Design

A cross-sectional survey design was used in this study. The quantitative measure of self-authorship described by Creamer, Baxter Magolda, and Yue (2010), referred to as the Career Decision Making Survey-Self Authorship (CDMS-SA), was used as the instrument. The survey instrument was transcribed into web-based survey software and administered to participants through emailing a hyperlink to the survey.

Population and Sampling Procedures

The target population for this study was students enrolled in professional athletic training degree programs accredited by the Commission on Accreditation of Athletic Training Education (CAATE)—baccalaureate and master's degree levels.

Probability sampling was used in recruitment of participants. Email addresses for all non-certified student members of the National Athletic Trainers' Association (NATA) were acquired from the NATA. Permission to do so was secured from the NATA and demonstrated by the NATA's sale of batch email addresses for subject recruitment purposes (Appendix F). These non-certified student members of the NATA represented students enrolled in the more than 350 professional athletic training degree programs across the United States who have chosen to purchase memberships in the NATA. While not all students studying to become athletic trainers choose to become members of the NATA, those non-members' email addresses are nearly inaccessible and were not included in subject recruitment efforts.

The NATA, however, can query and sell batches of contact information for members of its various membership classes—including its non-certified student members. Non-certified student members ranged from students in their first year of

college to students enrolled in entry-level master's athletic training degree programs.

Instrumentation

The quantitative measure of self-authorship described by Creamer, Baxter Magolda, & Yue (2010), referred to as the Career Decision Making Survey-Self Authorship (CDMS-SA), was used for this study. The CDMS-SA is composed of select items from the Career Decision Making Survey (CDMS), originally developed by researchers studying the process of high school and college students' discernment of careers in information technology (Creamer et al., 2010).

Measures

Twenty-eight items in the original CDMS survey make up one of its sections referred to as "Diverse Viewpoints and Decision Making." Seventeen of these items have been teased out and demonstrated to be valid and reliable measures of the various phases and dimensions of self-authorship (Creamer et al., 2010). Items within the CDMS-SA instrument are answered by participants using a 4-point Likert-type scale. Responses include 1 (disagree), 2 (slightly disagree), 3 (slightly agree), and 4 (agree). Items within the CDMS-SA are similar to those in other instruments used to measure self-authorship including the Measure of Epistemological Reflection (MER) (Baxter Magolda & Porterfield, 1985; Baxter Magolda, 2001a), but the CDMS-SA (Creamer et al., 2010) items provide a more holistic measure of the self-authorship phenomenon (Creamer et al., 2010). For the purposes of this study, the CDMS-SA (Creamer et al., 2010) was transcribed into web-based survey software and disseminated to participants through email correspondence. All items and response selections, however, remained as they would in the "paper-and-pencil" CDMS-SA.

Validity and Reliability of the Instrument

Evidence of the CDMS-SA's validity is presented in this section and demonstrates correlation between self-authorship dimensions and phases as measured by the instrument. Following this, evidence regarding the instrument's ability to reliably measure the dimensions and first three phases of self-authorship are discussed.

Correlations between the dimensions of self-authorship (e.g., interpersonal, intrapersonal, and epistemological) are theorized to be intertwined instead of mutually independent of one another (Creamer et al., 2010). The following correlations demonstrate confirmation of an assumption that the dimensions of self-authorship are related.

The interpersonal dimension of self-authorship is correlated to the intrapersonal dimension ($r = .706, p < .001$), the intrapersonal dimension is correlated to the epistemological dimension ($r = .654, p < .001$), and the epistemological dimension is correlated to the interpersonal dimension ($r = .809, p < .001$) (Creamer et al., 2010, p. 557).

The CDMS-SA (Creamer et al., 2010) is validated only to measure the first three phases of the self-authorship journey. A "weak, but statistically significant" (p. 558), positive correlation exists between Phase 1 and Phase 2 ($r = .369, p < .001$). The correlation between Phase 2 and Phase 3 is stronger and positive ($r = .888, p < .001$). Correlation between Phase 1 and Phase 3 is weak but positive ($r = .298, p < .001$). The correlations among the phases indicate there to be a greater "conceptual leap" (p. 558) experienced by an individual when he or she transitions from Phase 1 to Phase 2, than the leap from Phase 2 to Phase 3 (Creamer et al., 2010).

Creamer, Baxter Magolda, & Yue (2010) also suggest the scales in the CDMS-SA instrument reliably measure the dimensions and phases of self-authorship. The CDMS-SA (Creamer et al., 2010) is most reliable, for example, at measuring the intrapersonal dimension and the third phase of the self-authorship journey (i.e., early self-authoring phase). Reliability of measuring the epistemological ($\alpha = .595$), interpersonal ($\alpha = .614$), and intrapersonal ($\alpha = .713$) dimensions range from low to moderate (Creamer et al., 2010). Similarly, the instrument's reliability of measuring the external formulas ($\alpha = .58$), crossroads ($\alpha = .62$), and early self-authoring ($\alpha = .70$) phases of the self-authorship journey are low to moderate (Creamer et al., 2010).

In addition to the CDMS-SA (Creamer et al., 2010) portion of the survey instrument used in the current study, a section was aimed at collecting general and demographic information of participants. Such information was necessary to collect in order to better understand the profile of individuals participating in the study, as well as to answer the third research question.

Procedures

As noted previously, a cross-sectional survey design was employed to administer the CDMS-SA (Creamer et al., 2010) survey instrument using web-based survey software. The survey was administered to participants through emailing a hyperlink to the survey. Email addresses for all non-certified student members of the National Athletic Trainers' Association (NATA) who provided the NATA with consent to sell their contact information to third parties were acquired, through purchase, from the NATA Knowledge Initiatives Department.

The instrument was emailed on a Monday morning and made available to participants for 24 hours, 7 days per week for 3 weeks. Participants first read an email recruitment message (Appendix A) explaining the reason for the research and how participation will benefit athletic training education. The recruitment message then invited him or her to follow the provided hyperlink to the web-based survey. Thus, the location of survey completion was at the discretion of the participants. It is presumed most respondents completed the survey either in a computer lab, on a personal computer at their residence, or using a cellular phone web browser. Follow-up email reminders (Appendix B) were sent to participants—each on the Mondays of “Week 2” and “Week 3” of the availability window.

All data were stored in a password-protected computer within the Co-Principle Investigator’s office. Moreover, the web-based survey software was password protected under the Co-Principle Investigator’s account. Data will be kept for a maximum of 5 years and then destroyed.

Data Analysis

Data from the CDMS-SA (Creamer et al., 2010) instrument was analyzed using quantitative statistical analysis procedures. Those procedures are discussed in the following paragraphs in an order corresponding with the study’s guiding research questions.

Research Questions

This study was guided by the following research questions.

1. What is the relationship (or “level of agreement” (Creamer et al., p. 557, 2010)) between the cluster of survey items intended to measure the dimensions

and those intended to measure the phases of self-authorship among a sample of athletic training students?

- a. Do the results of the study of athletic training students support Creamer's factor structure of the dimensions of self-authorship?
 - b. Do the results of the study of athletic training students support Creamer's factor structure of the phases of self-authorship?
2. To what extent are the three developmental phases (e.g., external formulas, crossroads, and becoming author) of self-authorship represented among athletic training students?
 3. Do differences exist in the developmental phases (e.g., external formulas, crossroads, and becoming author) and dimensions (e.g., intrapersonal, interpersonal, and epistemological) of self-authorship among independent variables (gender, ethnicity, and student risk-profile)?

Because the first research question inquired about the relationship (or “level of agreement” (Creamer et al., p. 557, 2010)) between the cluster of survey items intended to measure the dimensions and those intended to measure the phases of self-authorship among a sample of athletic training students, data analysis procedures began with factor and reliability analyses. These analyses were also used to answer the sub-questions of Research Question #1 including: Do the results of the study of AT students support Creamer's factor structure of the dimensions of SA? and, Do the results of the study of AT students support Creamer's factor structure of the phases of SA?

Factor analysis provided a means for the relationship, or level of agreement, among and between the phases, dimensions, and clusters of survey items to be measured.

This process allowed the cluster of items within the CDMS-SA (Creamer et al., 2010) intended to measure the dimensions and those intended to measure the phases of self-authorship to be screened—verifying whether or not they collectively represented the dimensions, phases, and overarching construct of self-authorship among this particular population of students. In brief, the factor analysis technique allowed the construct validity of the CDMS-SA instrument (Creamer et al., 2010) among our sample of participants to be examined. Doing so enabled the originally purported factor structures of the instrument to be explored and compared to those demonstrated by our sample of participants' responses to survey items (Matthews & Kostelis, 2011).

Although preliminary evidence of the CDMS-SA instrument's construct validity exists (Creamer et al., 2010), it is supported to explore factor loadings and structures when employing an instrument to a different sample of participants (Matthews & Kostelis, 2011). Matthews and Kostelis (2011) support this process of re-examining factor loadings and structures to further ensure consistency in data collection. Such an analysis aided answering the first research question and its sub-questions because it determined whether or not the items within the CDMS-SA (Creamer et al., 2010) did, in fact, measure the construct of self-authorship among the athletic training students.

Reliability analysis was also used to answer the first research question as it further revealed whether or not items within the CDMS-SA (Creamer et al., 2010) accurately and predictably support the original factor structure of the dimensions and phases of self-authorship. Thus, the reliability analysis enabled relationship between the survey items and the intended dimensions and phases to be determined. Most importantly, reliability analysis allowed determination of internal consistency among the CDMS-SA (Creamer et

al., 2010) items (Creswell, 2014; Matthews & Kostelis, 2011). Examining the survey items' internal consistency revealed whether or not responses to survey items were one-dimensional to the proposed factor (Matthews & Kostelis, 2011). This form of reliability analysis was used as it is the common and accepted method of doing so in survey research designs (Matthews & Kostelis, 2011).

The second research question was to determine the extent to which the three developmental phases (e.g., external formulas, crossroads, and becoming author) of self-authorship were represented among athletic training students. In order to answer this question, descriptive statistics were used to produce Self-Authorship Summary Scores and provide information regarding the second research question.

The third research question inquired about differences in the developmental phases (e.g., external formulas, crossroads, and becoming author) and dimensions (e.g., intrapersonal, interpersonal, and epistemological) of self-authorship among independent variables (gender, ethnicity, and student risk profile). Regression and analysis of variance (ANOVA) served as statistical analyses to answer this third research question. Analysis of variance is a statistical analysis allowing mean differences in CDMS-SA (Creamer et al., 2010) scores to be analyzed between and within factors (age, gender, ethnicity, and student risk profile) (Harris, 1998). Such an analysis helped answer research question three as it determined differences in CDMS-SA (Creamer et al., 2010) scores related to, or dependent on, the factors tested in the analysis (age, gender, ethnicity, and student risk profile). Regression analysis served as the final analysis as it enabled prediction of CDMS-SA (Creamer et al., 2010) scores based on various factors (age, gender, ethnicity, and student risk profile) (Harris, 1998). A summary of the research questions and

statistical analyses used in this study are provided in Table 1.

Table 1

Summary of Research Questions and Statistical Analyses

Research Question/Statistical Technique	Descriptive Statistics	ANOVA/Regression	Factor Analysis/Reliability
1 ('a' and 'b')			x
2	x		
3		x	

Internal and External Validity

The ensuing section will work to acknowledge issues of internal and external validity associated with this study. The section will begin by discussing threats, and opportunities to control such threats, to internal validity. This will be followed by a similar discussion regarding external validity.

Internal Validity

An assumption regarding the operationalization of self-authorship is that its complex, interwoven phases and dimensions can be quantitatively recorded and made into distinct quantitative scales (Creamer et al., 2010). Doing so, however, must be acknowledged to have inherent limitations and influences the study's internal validity.

For example, because the phases, dimensions, and constructive-developmental nuances of self-authorship are not linear in sequence, individuals can demonstrate having the same thought content but arrive to that content using different structures (Baxter Magolda & King, 2012). So, a questionnaire item on a survey may be answered by

respondents in the same way but fail to reveal the respondents' thought processes, or structures. The survey item then, if interpreted alone, only reveals *what* a respondent thinks and not *how* he or she thinks. Thus, attempting to capture these nuances in a "snapshot" from a survey instrument and quantitatively separate them into interval categories challenges the internal validity of the study.

Nonetheless, such threats and limitations are acknowledged, and it is assumed a quantitative instrument can appropriately be used to provide at least a portion of evidence of individuals' journey toward self-authorship. Moreover, the instrument's items, when interpreted in relation to each other, provide evidence of the respondent's tendencies of thought structure. This is due to the items being designed to collectively correspond with and reveal one's thought process—which can be psychometrically related to typical thought structures inherent in the different phases of self-authorship. This is how the threat of the instrument's accuracy on internal validity was minimized.

Aside from the aforementioned threat regarding instrument accuracy, there exist other threats to the study's internal validity. Because a systematic sampling procedure was used for subject recruitment and it was a voluntary decision for subjects to choose to participate, there may have been a form of selection bias that occurred (Creswell, 2014; Matthews & Kostelis, 2011). In other words, the basis of an individual's decision to participate, or not participate, in the study may be indicative of his or her preexisting state of being—his or her motivation levels, self-efficacy, intentionality, and self-authorship, for example. To minimize this limitation, the best option would be to use randomization in the research design (Creswell, 2014; Matthews & Kostelis, 2011). Since this study did not utilize a true experimental design (e.g., comparing an experimental group to a control

group), randomization of subjects to the intervention was incompatible (Creswell, 2014). Nonetheless, subject recruitment efforts were aimed at the largest accessible target population (e.g., all non-certified student members of the NATA). Having a large sample size may have helped include and exclude individuals having innumerable reasons for choosing or choosing not to participate in the study.

An additional threat to internal validity was considered a form of Hawthorne Effect (Dickenson & Roethlisberger, 2004; Mayo, 2003). Participants, after reading the recruitment email message and instructions for the survey, may have gained an understanding of what was intended to be observed in the study. As such, having understood they were being “studied” for particular reasons may have caused participants to respond to items differently than they would having no understanding of what was, conceptually, being studied. To limit this threat to internal validity, only a brief explanation of the study’s purpose and instrument’s purpose was revealed to participants in the recruitment communications and survey instructions.

Other threats to internal validity included the location where participants completed the survey. Individuals may respond to survey items differently if the surveys are completed in places that may affect responses. Creswell (2014) refers to this threat as the “interaction of setting and treatment” (p. 176). For example, completing the survey in a public space amongst other individuals taking the same survey may influence one’s response to items. This threat was combated in this study’s research design because the survey instrument was web-based and could be completed when and where the participant desired. It should be acknowledged, too, that instrument decay may have taken place (Matthews & Kostelis, 2011). In this sense, participants may have become

tired, disengaged, or felt rushed with the survey instrument at a given point. This may have influenced their responses to items and commitment to completing the entire survey. This threat was controlled through the brevity of the survey instrument (Matthews & Kostelis, 2011) and an estimated time-to-complete of approximately 10 to 15 minutes. Participants, however, did not have to complete the survey within that time frame; in fact, they were able to save their work in the web-based survey and return to it at another time.

These threats to internal validity including instrument accuracy, selection bias, Hawthorne Effect, location, and instrument decay were considered limitations as they were, to some extent, outside of the researcher's control. While I acknowledge them as being outside of my control, I remained diligent in efforts to control such threats to internal validity as noted in the aforementioned paragraphs.

External Validity

The discussion will shift now to acknowledging issues of external validity associated with this study.

Irrespective of the methodology used to study a phenomenon, one must acknowledge there to be challenges in attempting to generalize information surrounding a complex construct such as self-authorship. More specifically, there may have been a subject-treatment interaction when measuring self-authorship, where, the study's findings of a sample of athletic training students were such, only because of unique characteristics of that group. Thus, the results may only be generalizable to, in this case, athletic training students (Creswell, 2014).

This threat to external validity, however, was combated through the work of previous authors and underlying assumptions of the self-authorship construct. First, it

was assumed and has been supported that self-authorship and its constructive-developmental nature is similar across epistemological disciplines and varies little across topics (Creamer et al., 2010). So, although it has been quantitatively studied among Information Technology students' perceptions of matters related to career-decision making, the evolution of self-authorship dimensions and phases are considered consistent across epistemological disciplines and topics (Creamer et al., 2010). Therefore, the CDMS-SA (Creamer et al., 2010) instrument employed in this study was assumed to contain good external validity in its capacity to measure and generalize the dimensions and phases of self-authorship among students enrolled in professional athletic training degree programs.

The previous section acknowledged threats to this study's internal and external validity. The section also discussed ways such threats were controlled. It must be acknowledged that there are limitations of attempting to quantitatively measure self-authorship. It is important to also note the advanced, constructive-developmental processing of self-authorship and the necessity to be able to measure it is not a simple task for any research design. Rather, constructive-developmental meaning-making is complex and multifaceted as it becomes the tool by which an individual relies on while journeying toward self-authorship and working through the demands of school and life. Consequently, educational researchers and practitioners must continue directing research in this area and continually becoming informed of ways to better understand, promote, and assess students for self-authorship.

Summary

In summary, the purpose of this study was to advance the theoretical and practical understanding of self-authorship in athletic training education and empirically determine the extent to which a sample of athletic training students had progressed through the developmental phases of self-authorship. A quantitative, non-experimental survey design was employed to provide a numeric description of the development of self-authorship among a sample of athletic training students. Moreover, the measure of self-authorship described by Creamer et al. (2010), referred to as the Career Decision Making Survey-Self Authorship (CDMS-SA), served as the instrument used for this study. Finally, data from the CDMS-SA (Creamer et al., 2010) instrument were analyzed using several quantitative statistical analyses including factor analysis, reliability analysis, descriptive statistics, analysis of variance, and regression analysis.

CHAPTER IV

SUMMARY OF RESULTS

Introduction

The purpose of this study was to examine the nature and development of self-authorship among a sample of students enrolled in athletic training degree programs. A cross-sectional, survey design was guided by three research questions. The quantitative measure of self-authorship described by Creamer et al. (2010), referred to as the Career Decision Making Survey-Self Authorship (CDMS-SA), was used for this study. It was transcribed into web-based survey software and disseminated to participants through email. Data from the CDMS-SA instrument was analyzed using quantitative statistical analysis procedures including descriptive statistics, factor analysis, reliability analysis, analysis of variance (ANOVA), and regression. This chapter presents the results of this study.

Participant Profile

Of the 5,400 non-certified student members of the NATA who were recruited for participation in this study, a total of 448 consented to participate by opening and completing the emailed survey link. Thus, the overall response rate was 8.29%.

Selected demographic characteristics of the study's participants are illustrated as frequencies and percentages in Table 2. The participants were a majority female (62%), White (not of Hispanic origin) (73%), and averaged 22.12 (± 2.9) years of age.

Table 2

Selected Demographic Characteristics

Characteristic	Frequency ^a (n)	(%)
Gender		
Male	110	24.6
Female	279	62.3
Age		
18-24	345	
25-31	39	8.6
32-38	10	2.2
>38	2	.4
Race		
Black, not of Hispanic origin	12	
Asian or Pacific Islander	18	4.0
White, not of Hispanic origin	328	73.2
Hispanic	22	4.9
Multi-ethnic	12	2.7
American Indian or Alaska	1	.2

^aDue to missing data, total may be less than 448

Frequencies and percentages of participants' educational and work characteristics are reported in Table 3. A majority of participants' fathers (27%) and mothers (29%) held bachelor's degrees as their highest levels of education. Seventy percent of the participants were enrolled in bachelor's level AT programs, of which the majority (36%) were seniors in academic standing. Seventeen percent of the participants, however, were graduate students enrolled in entry-level masters AT degree programs. Mean cumulative and athletic training major grade point averages among participants were 3.5/4.0 and 3.6/4.0, respectively. Moreover, participants predominantly (71%) intended to pursue athletic training as a career following completion of their athletic training professional degree programs. The majority of participants were members of District 4 (19%) of the NATA,

although participants from District 5 (13%) and District 2 (11%) comprised large proportions of the sample. While a majority of participants (43%) reported holding part-time employment, 41% noted having no employment and 4% noted being employed full-time.

As demonstrated in Tables 2 and 3, the participants in this study were varied in regard to their personal, educational, and work-related demographic characteristics.

Research Question 1

The first research question inquired about the relationship (or “level of agreement” (Creamer et al., 2010, p. 557)) between the cluster of survey items intended to measure the dimensions and those intended to measure the phases of self-authorship among a sample of athletic training students. Thus, data analysis procedures began with a factor analysis, followed by an analysis of reliability. These analyses were also used to answer the sub-questions of Research Question #1 including; Do the results of the study of AT students support Creamer’s factor structure of the dimensions of SA? and, Do the results of the study of AT students support Creamer’s factor structure of the phases of SA?

Table 3

Selected Educational and Work Characteristics

Characteristic	Frequency ^a (n)	(%)
Highest level of father's education		
Less than high school	16	3.6
High school or equivalent	106	23.7
Associate's/Community college	65	14.5
Bachelor's degree	120	26.8
Master's, doctorate, or professional degree	75	16.7
Other	9	2.0
Highest level of mother's education		
Less than high school	8	1.8
High school or equivalent	87	19.4
Associate's/Community college	80	17.9
Bachelor's degree	130	29.0
Master's, doctorate, or professional degree	76	17.0
Other	7	1.6
Level of AT degree program		
Bachelor's	314	70.1
Entry-level master's	77	17.2
Academic standing		
First-year undergraduate	5	1.1
Sophomore	57	12.7
Junior	95	21.2
Senior	162	36.2
First year, entry-level master's	36	8.0
Second year, entry-level master's	35	7.8
Third year, entry-level master's	3	.7
Intent to pursue athletic training as career		
Yes	317	70.8
No	26	5.8
Undecided	50	11.2
NATA District Membership		
District 1	23	5.1
District 2	50	11.2
District 3	27	6.0
District 4	84	18.8
District 5	58	12.9
District 6	26	5.8
District 7	29	6.5
District 8	37	8.3
District 9	27	6.0
District 10	19	4.2
Employment status		
Yes, part-time	193	43.1
Yes, full-time	16	3.6
Not employed	183	46.7

^aDue to missing data, total may be less than 448

Interpretation of factor analyses for the phases and dimensions of self-authorship as measured in the CDMS-SA (Creamer et al., 2010) was performed by applying three methods. These methods included evaluating the eigenvalue (Kaiser, 1960) and amount of variance explained (Foster, 2001). The third method, evaluating interpretability criteria (Hatcher, 1996; Vogt, 2007), was important as it allowed interpretation and naming of factors; hence, it is how the cluster of items within the CDMS-SA (Creamer et al., 2010) intended to measure the phases and those intended to measure the dimensions of self-authorship were screened. This process allowed Research Question #1 to be answered as it verified whether or not the CDMS-SA (Creamer et al., 2010) items collectively represented the dimensions, phases, and overarching construct of self-authorship among a sample of athletic training students.

Factor Analysis: The Phases of Self-Authorship

Interpretation began with examining eigenvalues in the table of total variance (Table 4) and communalities (Table 5). Six factors could have been retained as they had eigenvalues greater than 1 (Kaiser, 1960). However, using the eigenvalue criteria for determining factor structure is only reliable when communalities are greater than 0.70, and Table 5 illustrates no communalities greater than .553. Therefore, using the eigenvalue criteria in this case is questionable. The next criterion used to evaluate the factor analysis is variance. The first factor accounted for 17.2% of the total variance in the instrument, the second factor accounted for 9.9% and the third factor accounted for 7.5%. As these variance values did not, individually or accumulatively, account for a high amount of variability (Foster, 2001), preferably 70% of total variability, using the variance criterion to evaluate and retain the three-factor structure is also questionable.

Table 4

Total Variance Explained for Three-Factor Solution

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.927	17.216	17.216	2.927	17.216	17.216
2	1.675	9.853	27.069	1.675	9.853	27.069
3	1.271	7.476	34.545	1.271	7.476	34.545
4	1.129	6.642	41.187			
5	1.039	6.114	47.302			
6	1.000	5.882	53.184			
7	.961	5.652	58.836			
8	.934	5.491	64.327			
9	.854	5.025	69.352			
10	.824	4.846	74.199			
11	.720	4.236	78.434			
12	.692	4.069	82.504			
13	.665	3.914	86.417			
14	.627	3.691	90.108			
15	.608	3.576	93.684			
16	.554	3.258	96.943			
17	.520	3.057	100.000			

Table 5

Commonalities for Three-Factor Solution

	Initial	Extraction
Q1	1.000	.293
Q2	1.000	.474
Q3	1.000	.342
Q4	1.000	.147
Q5	1.000	.380
Q6	1.000	.553
Q7	1.000	.255
Q8	1.000	.432
Q9	1.000	.209
Q10	1.000	.289
Q11	1.000	.425
Q12	1.000	.378
Q13	1.000	.433
Q14	1.000	.172
Q15	1.000	.190
Q16	1.000	.396
Q17	1.000	.504

The next step was to evaluate results of the factor analysis through the lens of previously supported interpretability criteria (Hatcher, 1996; Vogt, 2007). Specifically, four rules (Hatcher, 1996; Vogt, 2007) were used to determine factor structure of the instrument including, (a) were there at least three CDMS-SA items with loadings on each factor? (b) Did the CDMS-SA items that loaded on a given factor share conceptual meaning, or, intend to measure the same underlying construct? (c) Did CDMS-SA items that loaded on different factors seem to be measuring the different constructs (i.e.,

phases)? and (d) Did the rotated factor pattern demonstrate “simple structure?” Simple structure was considered if most of the CDMS-SA items had relatively high factor loadings on only one factor, and near-zero loadings for the other factors. Additionally, if most factors had relatively high factor loadings for some items, and near-zero loadings for the remaining items.

Prior to reporting the results of factor loadings, it is important to reiterate the originally defined and intended factor structure of the CDMS-SA survey instrument (Creamer et al., 2010). Table 6 shows the CDMS-SA questionnaire items by phase and dimension of development of self-authorship.

The CDMS-SA was originally developed and described to have three factors representing the three phases of self-authorship (external formulas, crossroads, and early self-authoring). The External Formulas (EF) phase has been proposed to be measured by CDMS-SA survey items 1-6. Thus, those survey items represent the originally proposed factor structure for the EF phase of self-authorship. The Crossroads (CR) phase has been proposed to be measured by CDMS-SA survey items 7-11, where those survey items represent the originally proposed factor structure for the CR phase of self-authorship. Finally, the Early Self-Authoring (ESA) phase has been proposed to be measured by CDMS-SA survey items 12-17. Therefore, those survey items represent the originally proposed factor structure for the ESA phase of self-authorship (Creamer et al., 2010).

Table 6

Career Decision Making Survey—Self-Authorship (CDMS-SA)

CDMS-SA Item #	Phase	Original CDMS #	Dimension	Questionnaire Item
1	^a EF	9	Epistemological	To make a good choice about a career, I think that facts are the strongest basis for a good decision.
2	^a EF	11	Epistemological	To make a good choice about a career, I think that experts are in the best position to advise me about a good choice.
3	^a EF	13	Interpersonal	The most important role of an effective career counselor or advisor is to be an expert on a variety of career options.
4	^a EF	14	Interpersonal	The most important role of an effective career counselor or advisor is to provide guidance about a choice that is appropriate for me.
5	^a EF	1	Intrapersonal	My primary role in making an educational decision, like the choice of a major or career, is to acquire as much information as possible.
6	^a EF	2	Intrapersonal	My primary role in making an educational decision, like the choice of a major or career, is to seek direction from informed experts.
7	^b CR	10	Epistemological	To make a good choice about a career, I think that it is largely a matter of personal opinion.
8	^b CR	22	Epistemological	When people have different interpretations of a book, I think that some books are just that way. It is possible for all interpretations to be correct.
9	^b CR	8	Interpersonal	If a teacher or advisor recommends a career in a field that I have never considered before, I would try to explain my point of view.
10	^b CR	15	Interpersonal	The most important role of an effective career counselor or advisor is to help students to think through multiple options.

(Table continues)

CDMS-SA Item #	Phase	Original CDMS #	Dimension	Questionnaire Item
11	^b CR	4	Intrapersonal	My primary role in making an educational decision, like the choice of a major or career, is to consider my own views.
12	^c ESA	12	Epistemological	To make a good choice about a career, I think that it is not a matter of facts or expert judgment, but a match between my values, interests, and skills and those of the job.
13	^c ESA	24	Epistemological	When people have different interpretations of a book, I think that multiple interpretations are possible, but some are closer to the truth than others.
14	^c ESA	26	Epistemological	Experts are divided on some scientific issues, such as the causes of global warming. In a situation like this, I would have to look at the evidence and come to my own conclusions.
15	^c ESA	27	Epistemological	Experts are divided on some scientific issues, such as the causes of global warming. In a situation like this, I think it is best to accept the uncertainty and try to understand the principal arguments behind the different points of view.
16	^c ESA	6	Interpersonal	If a teacher or advisor recommended a career in a field that I have never considered before, I would try to understand their point of view and figure out an option that would best fit my needs and interests.
17	^c ESA	16	Interpersonal	In my opinion, the most important role of an effective career counselor or advisor is to direct students to information that will help them to make a decision on their own.

Note. Questionnaire items from CDMS-SA by phase and dimension.

^aExternal formulas phase

^bCrossroads phase

^cEarly self-authoring phase

As the previous paragraph iterated the intended and previously proposed factor structure of the CDMS-SA, the ensuing section will report findings of the factor loadings demonstrated by the data collected in this study after administering the CDMS-SA to a sample of athletic training students. Factor analysis forced to generate a three-factor solution (representing the phases of self-authorship) with intent to evaluate the previously supported framework of the concept and measurement of self-authorship.

Table 7 illustrates the factor loadings for rotated components (factors) in the current study. In this study, Factor 1 consisted of CDMS-SA (Creamer et al., 2010) survey items 1-6.

Factor 2 included CDMS-SA survey items 7, 8, 10, and 11. These five items had positive loading but failed to include CDMS-SA item #9. Factor 3 consisted of CDMS-SA (Creamer et al., 2010) survey items 9, 13, 14, 15, 16, and 17. These items had positive loading but failed to include CDMS-SA item #12 and included item #9. Item #12 demonstrated moderate and similar loading in Factors 2 and 3; therefore, it was removed from the factor structure entirely. Item #9 was intended by the original developers of the CDMS-SA to support Factor 2 (CR), yet it was shown in this study to support Factor 3 (ESA).

Table 7

Factor Loadings for Rotated Components^a

	Component		
	1	2	3
Q1	.526		
Q2	.649		
Q3	.556		
Q4	.340		
Q5	.600		
Q6	.668		
Q7			.475
Q8			.652
Q9		.415	
Q10			.375
Q11	.336		.528
Q12		.432	.413
Q13		.535	-.378
Q14		.341	
Q15		.344	
Q16		.617	
Q17		.708	

Note. Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

^aRotation converged in 4 iterations.

Reliability Analysis: The Phases of Self-Authorship

Reliability analysis was used to further answer Research Question #1 as it revealed whether or not items within the CDMS-SA (Creamer et al., 2010) accurately and predictably supported Creamer et al.'s (2010) factor structure of the phases of self-authorship (Creswell, 2014; Foster, 2001; Matthews & Kostelis, 2011).

As noted previously, the original CDMS-SA factor structures for the phases of self-authorship were not fully supported by the data from this study due to variations in factor loadings among CDMS-SA questionnaire items. Although variations were demonstrated, the majority of the CDMS-SA items did fit into the originally intended factor structures of the instrument. Discerning whether or not the data gleaned from this study is usable, though, the identified items and factor structures must demonstrate reliability. Demonstrating reliability would indicate that if the same individuals completed the CDMS-SA survey again, they would have nearly the same responses.

In this study, the coefficient of reliability for the CDMS-SA instrument measuring the construct of self-authorship, in its entirety, did not meet an acceptable level of at least 0.70 ($\alpha = .663$) (Foster, 2001). Reliability coefficients for the CDMS-SA items within the three factors (representing the first three phases of self-authorship) also did not meet acceptable levels and are illustrated in Table 8.

Table 8

Reliability Coefficients of the CDMS-SA's Measurement of Self-Authorship in its Entirety and CDMS-SA Item Scales Measuring the Phases of Self-Authorship

Construct/Phase	Cronbach's Alpha
Self-authorship	.663
External Formulas (EF)	.648
Crossroads (CR)	.362
Early Self-authoring (ESA)	.500

Reliability coefficients for the groups of items loaded into external formulas (Factor 1), crossroads (Factor 2), and early self-authoring (Factor 3) were .648, .362, and .500, respectively. Even though the CDMS-SA items intended to measure the phases of self-authorship predominantly fit into the factor structures originally developed by Creamer et al. (2010), they demonstrated unacceptable levels of internal consistency or reliability.

Reliability of the originally intended scales of items representing for the phases of self-authorship were also analyzed. Reliability coefficients for the original scale of items representing external formulas (Factor 1), crossroads (Factor 2), and early self-authoring (Factor 3) were .648, .386, and .484, respectively.

Factor Analysis: The Dimensions of Self-Authorship

The previous sections have reported findings of factor and reliability analyses of the CDMS-SA items (scales) measuring the phases of self-authorship (external formulas, crossroads, early self-authoring). The ensuing section, however, will report findings of factor and reliability analyses of the CDMS-SA items (scales) measuring the dimensions of self-authorship. Although the items in the CDMS-SA were previously grouped into

scales (factors) measuring the phases of self-authorship, in order to report factor structure and reliability of the CDMS-SA's measurement of the dimensions of self-authorship, the items will be grouped by dimension for the ensuing section.

It is also important to reiterate this section is a continued effort to answer Research Question #1. The first research question inquired about the relationship (or "level of agreement" (Creamer et al., 2010, p. 557)) between the cluster of survey items intended to measure the dimensions and those intended to measure the phases of self-authorship among a sample of athletic training students. This guiding research question had sub-questions as well. These included: Do the results of the study of AT students support Creamer's factor structure of the dimensions of SA? and, Do the results of the study of AT students support Creamer's factor structure of the phases of SA? Thus, this section will report findings of the factor structure and reliability of the CDMS-SA's measurement of the dimensions of self-authorship among the sample of athletic training students.

Similar to interpreting the factor analyses for the phases of self-authorship, interpreting the factor analysis of the dimensions was performed by applying three methods. These methods included evaluating the eigenvalue (Kaiser, 1960) and amount of variance explained (Foster, 2001). The third method, evaluating interpretability criteria (Hatcher, 1996; Vogt, 2007), was important as it allowed interpretation and naming of factors; hence, it is how the cluster of items within the CDMS-SA (Creamer et al., 2010) intended to measure the dimensions of self-authorship were screened. This process allowed Research Question #1 to be answered as it verified whether or not the CDMS-SA (Creamer et al., 2010) items collectively represented the dimensions, among a

sample of athletic training students.

Interpretation of the factor analysis solution began by examining eigenvalues in the table of total variance (Table 4) and communalities (Table 5). These findings were synonymous with the ones reported in the factor analysis section regarding the phases of self-authorship. The reason the findings are the same is that the same factor analysis procedure was performed on the same set of variables (CDMS-SA items 1-17) and manipulated to fit the items into a three-factor structure. Although the previous three-factor structure was examining the CDMS-SA items' fit into the phase structures, the CDMS-SA items were later evaluated for their fit into the three dimensions.

Prior to reporting the results of factor loadings for the dimensions of self-authorship, it is important to reiterate the originally defined and intended factor structure of the CDMS-SA survey instrument (Creamer et al., 2010). Table 6 shows the CDMS-SA questionnaire items by phase and dimension of development of self-authorship.

The CDMS-SA was originally developed and described to have three factors representing the three dimensions of self-authorship (epistemological, interpersonal, and intrapersonal). The epistemological dimension has been proposed to be measured by CDMS-SA survey items 1, 2, 7, 8, and 12-15. Thus, those survey items represent the originally proposed factor structure for the epistemological dimension of self-authorship. The interpersonal dimension has been proposed to be measured by CDMS-SA survey items 3, 4, 9, 10, 16, and 17, where, those survey items represent the originally proposed factor structure for the interpersonal dimension of self-authorship. Finally, the intrapersonal dimension has been proposed to be measured by CDMS-SA survey items 5, 6, and 11. Therefore, those survey items represent the originally proposed factor

structure for the intrapersonal dimension of self-authorship (Creamer et al., 2010).

As the previous paragraph iterated the intended and previously proposed factor structure of the CDMS-SA, the ensuing section reports findings of the factor loadings demonstrated by the data collected in this study after administering the CDMS-SA to a sample of athletic training students. Factor analysis procedure was forced to extract three factors (representing the dimensions of self-authorship) with intention to examine the previously supported framework of the concept and measurement of self-authorship (Creamer et al., 2010).

Table 7 illustrates the factor loadings for rotated components (factors) in the current study. Observing Table 7 illustrates no clear fit of items into the previously supported factor structures of the dimensions of self-authorship. CDMS-SA items 1 and 2 demonstrate moderate and positive loadings into a shared scale we might tentatively name, Factor 1 (epistemological dimension). Unfortunately, though, items previously proposed to represent the intrapersonal dimension (Items 5 and 6) also demonstrated loading into the epistemological dimension's scale. CDMS-SA items 9, 16, and 17 fit into a shared scale we might tentatively name Factor 2 (interpersonal dimension). However, the remaining items previously proposed to represent the interpersonal dimension (items 3, 4, and 10) demonstrated factor loadings in the other two factors.

A third factor was comprised of items intended to represent the epistemological dimension (items 7 and 8), one intended to represent the interpersonal dimension (item 10), and only one intended to represent the intrapersonal dimension (item 11). We might tentatively name this scale, Factor 3 (intrapersonal dimension). Although I have conceptually named and retained the three factors (dimensions) in this report, results of

the factor analysis demonstrate the need for further investigation to continue to refine the three proposed dimensions of self-authorship.

Reliability Analysis: The Dimensions of Self-Authorship

Reliability analysis was later used to further answer Research Question #1 as it revealed whether or not items within the CDMS-SA (Creamer et al., 2010) accurately and predictably support Creamer et al.'s (2010) factor structure of the dimensions of self-authorship (Creswell, 2014; Foster, 2001; Matthews & Kostelis, 2011). Thus, the reliability analysis enabled an additional avenue for determining relationship between the survey items and their intended dimensions to be determined.

As noted previously, the original CDMS-SA factor structures for the dimensions of self-authorship were not supported by the data from this study due to double-loadings among CDMS-SA questionnaire items. As an additional filter to verify whether or not the data gleaned from this study is usable, the factors were assessed for reliability. In doing so, items' reliability was completed in the originally prescribed scales (factor structure) for the dimensions of self-authorship. This was because there was, as described in the previous section, complex factor structure of the dimensions to use for a reliability analysis.

As noted previously, the Cronbach reliability coefficient for the CDMS-SA instrument measuring the construct of self-authorship did not meet the reliability threshold of at least 0.70 ($\alpha = .663$) (Foster, 2001). Reliability coefficients for the CDMS-SA items within the originally proposed three factors (representing the dimensions of self-authorship) also did not meet acceptable levels and are summarized in Table 9.

Table 9

*Reliability Coefficients of CDMS-SA Item Scales
Originally Intended to Measure the Dimensions
of Self-Authorship*

Dimension	Cronbach's Alpha
Epistemological	.368
Interpersonal	.483
Intrapersonal	.469

Reliability coefficients for the groups of items loaded into epistemological (Factor 1), interpersonal (Factor 2), and intrapersonal (Factor 3) dimensions were .368, .483, and .469, respectively. CDMS-SA items intended to measure the dimensions of self-authorship failed to fit into factor structures originally developed by Creamer et al. (2010) and they demonstrate low internal consistency or, reliability.

Research Question 2

The second research question was to determine the extent to which the three developmental phases (e.g. external formulas, crossroads, and becoming author) of self-authorship were represented among athletic training students. In order to answer this question, descriptive statistics were used to produce Self-Authorship Summary Scores and provide information regarding the second research question.

Previous authors have conceptualized the CDMS-SA's ability to measure respondents' levels of self-authorship by providing a Self-Authorship Summary Score (Creamer et al., 2010). The summary score can be conceptualized "as a 3x3 matrix with 9 cell scores" (Creamer et al., 2010). The mean of responses to the CDMS-SA questionnaire items, based on the 4-point Likert-type scale (e.g. 1-disagree, 2-slightly

disagree, 3-slightly agree, and 4-agree), are represented in the cells. Scores in the rows of cells represent mean scores for the three dimensions (epistemological, interpersonal, and intrapersonal), while, scores in the columns of cells represent the three phases (external formulas, crossroads, and early self-authoring). Computing the mean for each questionnaire item, in the rows and columns respectively, enables a three-part summary score to be constructed. This score represents a sample of respondents' levels of agreement with the questionnaire items (Creamer et al., 2010).

For example, a summary score of 1-1-3 would indicate a sample of respondents having high agreement with questionnaire items reflecting early self-authoring and low agreement with those reflecting external formulas and crossroads phases. Hence, this group, conceptually, would be considered to have self-authored meaning-making and low reliance on external formulas.

To begin conceptualizing summary scores for the sample of athletic training students in this study, one must first observe descriptive statistics of responses to each CDMS-SA item (Table 10). Following an observation of the mean scores for each item, one must compute the mean score of items within each scale of measurement within the instrument (e.g. the mean score for those items representing each phase and dimension of the overarching construct of self-authorship). Here, it is important to reconsider that the factor structures for phases and dimensions of self-authorship in this study did not parallel those described by previous authors (Creamer et al., 2010). The summary score computations, then, in this report reflect the factor structure of phases only, as they were structured in the data gleaned from this study. Table 11 reports the mean scores for CDMS-SA items representing the three phases of self-authorship.

Table 10

Descriptive Statistics of Responses to CDMS-SA Questionnaire Items

CDMS-SA Question #	Mean	Std. Deviation	N ^a
1	3.40	.618	399
2	3.20	.633	399
3	3.39	.697	399
4	3.66	.562	399
5	3.72	.526	399
6	3.23	.690	399
7	3.48	.613	399
8	3.37	.745	399
9	3.31	.595	399
10	3.74	.467	399
11	3.76	.455	399
12	3.65	.582	399
13	3.19	.787	399
14	3.63	.555	399
15	2.97	.812	399
16	3.51	.575	399
17	3.60	.553	399

^aDue to missing data (listwise), total may be less than 448

Table 11

Mean Scores of Responses to CDMS-SA Items Representing the Phases of Self-Authorship

Phase	Mean Score
External Formulas	3.43
Crossroads	3.59
Early Self-Authoring	3.37

In regard to the scale of CDMS-SA items representing the external formulas phase (Factor 1), the mean score was 3.43. The mean score for items representing the

crossroads phase (Factor 2) was 3.59 and the mean of items representing the early self-authoring phase (Factor 3) was 3.37. The overall Self-Authorship Summary Score for the sample of athletic training students who participated in this study was 3.43-3.59-3.37.

Research Question 3

The third research question inquired about mean differences in the developmental phases (e.g., external formulas, crossroads, and early self-authoring) and dimensions (e.g., intrapersonal, interpersonal, and epistemological) of self-authorship among independent variables (age, gender, ethnicity, and student risk profile). Regression analysis and analysis of variance (ANOVA) were used to answer this third research question.

Regression analysis was employed as it allows one to determine how accurately the independent variables (age, gender, race, and student risk profile) predict responses (Foster, 2001; Harris, 1998) on the CDMS-SA instrument (Creamer et al., 2010). Such analyses helped answer research question three as they determined and illustrate predictive differences in CDMS-SA (Creamer et al., 2010) scores related to, or dependent on, the factors tested in the analysis (age, gender, ethnicity, and student risk profile) (Foster, 2001; Harris, 1998).

In this study, the dependent variables used in the regression analysis were composite variables representing the instrument subscales for the phases and dimensions of self-authorship. In other words, the aim was to analyze whether or not the independent variables predicted scores in the study subscales of each phase and dimension of self-authorship. The aim was not, however, to determine if the independent variables predicted overall levels of self-authorship. The reason for analyzing with the aim of

predicting scores in the individual phases and dimensions, instead of the construct as a whole, was to detail and operationalize predictive characteristics of the complex makeup of the self-authorship construct.

Specifically, the factor structures of the phases as they were demonstrated by the data in this study were used to compute dependent variables representing the phases of self-authorship. The factor structures of the dimensions as they were originally intended by Creamer et al. (2010) were used to compute dependent variables representing the dimensions of self-authorship.

Independent variables used in the study included age, gender, race, cumulative grade point average (Cumulative GPA), and athletic training grade point average (Athletic Training GPA). The variable represented by cumulative grade point average was used to represent “student risk profile.”

Tolerance Statistic

Interpreting the regression analyses began with evaluating the tolerance statistics. The tolerance statistic represents a measure of multicollinearity—or an independent variable’s proportion of variance not explained by its relationship with the other independent variables included in the analysis (UCLA Statistical Consulting Group, 2016).

Tolerance statistics for independent variables—including, age, gender, race, cumulative GPA, and athletic training GPA—were .957, .965, .988, .344, and .341, respectively. Such tolerance levels are greater than .1 indicating the results of the regression model should be interpreted with caution.

Model Summary

The next step in evaluating results of the regression analysis was interpreting the multiple correlation index to determine the degree to which (or, how well) a group of independent variables predicted the dependent variable. This was done through examining data within the model summary table (Foster, 2001).

Model summary of the phases. The model summary shows the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) significantly predicting the external formulas phase but only accounting for 5.3% of the variance in the dependent variable ($R^2 = .053$, $R^2_{adj} = .040$, $F(5, 361) = 4.046$, $p = .001$). The model summary shows the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) significantly predicting the crossroads phase though accounting for only 3.0% of the variance in the dependent variable ($R^2 = .030$, $R^2_{adj} = .017$, $F(5, 361) = 2.261$, $p = .048$). The model summary shows the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) were significant predictors of the early self-authoring phase but only accounting for 2.0% of the variance in the dependent variable ($R^2 = .020$, $R^2_{adj} = .006$, $F(5, 361) = 1.451$, $p = .205$).

Model summary of the dimensions. The model summary shows the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) failing to significantly predict the epistemological dimension and only accounting for 1.6% of the variance in the dependent variable ($R^2 = .016$, $R^2_{adj} = .003$, $F(5, 361) = 1.451$, $p = .314$). The model summary also shows the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) failing to significantly predict the interpersonal dimension and only accounting for 2.6% of the variance in the dependent

variable ($R^2 = .026$, $R^2_{\text{adj}} = .012$, $F(5, 361) = 1.901$, $p = .093$). The model summary shows the independent variables (age, gender, race, cumulative GPA, and athletic training GPA), however, significantly predicting the intrapersonal dimension but only accounting for 5.6% of the variance in the dependent variable ($R^2 = .056$, $R^2_{\text{adj}} = .043$, $F(5, 361) = 4.271$, $p = .001$).

Analysis of Variance

Evaluating the ANOVA table represented the next step in interpreting the regression analysis output. This table reports an F -statistic and its corresponding level of significance for each generated regression model. Foster (2001) supports a statistically significant F -statistic, which indicates a linear relationship between the independent variables and the dependent variable in the regression model. Conceptually, this would mean the model (or the independent variables) significantly predict the dependent variable.

F -statistics were statistically significant for regression models using the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) to predict the external formulas phase ($F(5, 361) = 4.046$, $p = .001$) and crossroads phase ($F(5, 361) = 2.261$, $p = .048$). The F -statistic was not statistically significant for the regression model using the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) to predict the early self-authoring phase ($F(5, 361) = 1.451$, $p = .205$).

The F -statistic was not statistically significant for the regression model using the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) to predict the epistemological dimension ($F(5, 361) = 1.189$, $p = .314$) and the interpersonal dimension ($F(5, 361) = 1.901$, $p = .093$). The F -statistic was statistically significant,

however, for the regression model using the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) to predict the intrapersonal dimension ($F(5, 361) = 4.271, p = .001$).

Summary

Findings from this study showed questionable construct validity and undesirable levels of internal consistency (reliability) when attempting to assess self-authorship and its phases and dimensions among a sample of students enrolled in professional athletic training degree programs. Data revealed incongruence between the originally purported factor structures, or scales of items within the CDMS-SA (Creamer et al., 2010) instrument and those demonstrated by the sample of subjects in this study.

The findings also revealed an overall Self-Authorship Summary Score for the sample of athletic training students who participated in this study to be 3.43-3.59-3.37. Moreover, due to high measures of multicollinearity (e.g., tolerance statistics), independent variables including, age, gender, race, cumulative GPA, and athletic training GPA should not be retained and utilized in regression models for predicting respondents' levels of agreement with the phases and dimensions of self-authorship. A discussion of these findings and their implications, acknowledgement of the study's limitations, and recommendations for future research will be developed in the following chapter.

CHAPTER V
SUMMARY, DISCUSSION, LIMITATIONS,
AND RECOMMENDATIONS

Introduction

A summary of this study, including its purpose, participants, methodology, and findings will be explained in the following paragraphs. As the previous section reported results from the data analyses used in this study, the ensuing paragraphs will work to discuss those findings in relation to literature and theoretical assumptions surrounding the concept and assessment of self-authorship. The end of this section will acknowledge limitations and discuss recommendations for future research in this area of study.

Purpose and Scope of the Study

Previous paradigms of viewing athletic training student development have fueled enhancement of professional education in the field and facilitated continuous improvement of students' transitions to practice (Amato, Konin, & Brader, 2002; Dodge, Mitchell, & Mensch, 2009; Draper, 1989; Feiman-Nemser, 2001; Harrelson, Leaver-Dunn, & Wright, 1998; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012; Pitney, Ilsley, & Rintala, 2002; Pitney, 2002; Stradley et al., 2002; Thon & Hansen, 2015). The field's body of knowledge, however, lacks interpretation of athletic training student development through the lens of constructive-developmental phenomena such as self-authorship.

Moreover and unfortunately, scholars of teaching and learning contend there to be inadequate levels of meaning making and self-authorship among college students. Students, instead, tend to organize their internal meaning systems according to the beliefs and values of external authorities (Baxter Magolda, 1992; Kegan, 1994; King & Kitchener, 1994). Without meaning-making capacity, such as self-authorship, learners are left struggling to achieve dynamic and complex goals of school, work and life (Baxter Magolda & King, 2012).

Therefore, the purpose of this study was to advance the theoretical and practical understanding of self-authorship in athletic training education and empirically determine the extent to which the first three developmental phases (e.g., external formulas, crossroads, and becoming author) of self-authorship are represented among athletic training students.

Design and Methodology of the Study

A cross-sectional, survey design was guided by three research questions. A total of 448 non-certified student members of the NATA consented to participate in this study. These participants were among 5,400 non-certified student members of the NATA who were recruited for participation, providing an overall response rate of 8.29%. The participants were a majority female (62%), White (not of Hispanic origin) (73%), and averaged 22.12 (± 2.9) years of age.

The quantitative measure of self-authorship described by Creamer et al. (2010), referred to as the Career Decision Making Survey-Self Authorship (CDMS-SA), was used for this study. It was transcribed into web-based survey software and disseminated to participants through email. Data from the CDMS-SA instrument was analyzed using

quantitative statistical analysis procedures including descriptive statistics, factor analysis, reliability analysis, regression and analysis of variance (ANOVA).

Discussion of the Findings

Research Question 1

The first research question inquired about the relationship (or “level of agreement” (Creamer et al., p. 557, 2010)) between the cluster of survey items intended to measure the dimensions and those intended to measure the phases of self-authorship among a sample of athletic training students. In order to answer this question, data analysis procedures began with factor analysis, followed by analyses of reliability. These analyses were also used to answer the sub-questions of Research Question #1 including; Do the results of the study of AT students support Creamer’s factor structure of the dimensions of SA? and, Do the results of the study of AT students support Creamer’s factor structure of the phases of SA?

The instrument’s validity. Factor analysis provided a means for the relationship, or level of agreement, among and between the phases, dimensions, and clusters of survey items to be measured. This process allowed the cluster of items within the CDMS-SA (Creamer et al., 2010) intended to measure the dimensions and those intended to measure the phases of self-authorship to be screened, verifying whether or not they collectively measured and represented the dimensions, phases, and overarching construct of self-authorship among this sample of athletic training students.

It is important to first reiterate the originally defined and intended factor structure (scales) of the CDMS-SA survey instrument (Creamer et al., 2010). Table 6 shows the CDMS-SA questionnaire items by phase and dimension of development of self-

authorship.

The CDMS-SA was originally developed and described to have three factors representing the three phases of self-authorship (external formulas, crossroads, and early self-authoring). The External Formulas (EF) phase has been proposed to be measured by the scale of CDMS-SA survey items 1-6. Thus, those survey items represent the originally proposed factor structure for the EF phase of self-authorship. The Crossroads (CR) phase has been proposed to be measured by the scale of CDMS-SA survey items 7-11, where, those survey items represent the originally proposed factor structure for the CR phase of self-authorship. Finally, the Early Self-Authoring (ESA) phase has been proposed to be measured by CDMS-SA scale of survey items 12-17. Therefore, those survey items represent the originally proposed factor structure for the ESA phase of self-authorship (Creamer et al., 2010).

With these originally intended and previously proposed factor structures (scales) of the CDMS-SA in mind, this section discusses findings of the factor loadings demonstrated by the data collected in this study after administering the CDMS-SA to a sample of athletic training students.

Table 7 illustrates the factor loadings for rotated components (factors) in the current study. In this study, Factor 1 consisted of CDMS-SA (Creamer et al., 2010) survey items 1-6. These items had positive loadings and supported the external formulas phase being measured by its intended CDMS-SA (Creamer et al., 2010) survey items. These six items share conceptual meaning as they were each originally intended to assess an individual's reliance (and/or lack of reliance) on external formulas (Creamer et al., 2010).

The scale of CDMS-SA survey items measuring external formulas, as demonstrated by Creamer et al. (2010), was supported among the sample of athletic training students in this study. This finding speaks to the construct validity of the CDMS-SA survey items purported to measure external formulas.

In this study, Factor 2 included CDMS-SA survey items 7, 8, 10, and 11. These five items had positive loading but failed to include CDMS-SA item #9, thus failing to fully support the original factor structure of the crossroads phase. However, while CDMS-SA item #9 did not demonstrate loading in Factor 2, the other items supporting its structure share conceptual meaning as they were each originally intended to be measures of the crossroads phase. This finding illustrates the construct validity lacking full congruency with findings from previous authors (Creamer et al., 2010).

The exact reasoning for CDMS-SA item #9 failing to load into the Factor 2 (crossroads phase) scale is unknown. However, it may be demonstrative of a previously inaccurate understanding of the item's conceptual meaning and what it is intending—and able—to measure. CDMS-SA item #9 reads, “If a teacher or advisor recommended a career in a field that I have never considered before, I would explain my point of view” (Creamer et al., 2010, p. 555). Depending on a respondent's level of agreement with this item, he or she would be (or not be) characterized as being in the crossroads phase of self-authorship. In other words, someone in the crossroads phase of self-authorship should have demonstrated agreement with this item, much like the others within the Factor 2 (crossroads phase) scale. Since this was not the case in the current study, measurement error exists. Where such error exists, whether in the item's conceptual meaning or in this sample of subjects' interpretations and responses to the item, continues

to be unknown.

I posit the error exists in the interpretations and responses to the item by the participants in this study. This is for two reasons—first, the item communicates a hypothetical scenario that, conceptually and accurately, would require a respondent be in agreement with the crossroads phase to be in agreement with the statement. The statement, essentially, asks whether or not the individual would blindly accept the external formula of the teacher/advisor's career recommendation or enter into a crossroad where the external formula is challenged by the individual's point of view of the recommendation. With that, it seems appropriate to continue considering that the conceptual meaning of the item does, in fact, assess and align with the crossroads phase but failed to operationally do so in this particular sample of subjects.

The second reason I speculate the item error exists in the interpretations and responses to the item by the participants in this study is, simply, because previous work to validate the instrument and its measurement of the intended concepts was successful. So, since the only other empirical evidence available to compare the results of this study points to the item measuring its intended concept, it is not yet appropriate to conclude otherwise. If in future investigations the item continues to fail loading into the Factor 2 (crossroads) scale, I agree that its position in the scale or inclusion in the instrument entirely may necessitate reevaluation.

Factor 3 in this study consisted of CDMS-SA (Creamer et al., 2010) survey items 9, 13, 14, 15, 16, and 17. These items had positive loading but failed to include CDMS-SA item #12 and included item #9. Item #12 demonstrated moderate and similar loading in Factors 2 and 3; therefore, it was removed from the factor structure entirely. Item #9

was intended by the original developers of the CDMS-SA to support Factor 2 (CR), yet it was shown in this study to support Factor 3 (ESA). As such, the structure of this factor also failed to fully support the originally defined factor structure of the early self-authoring phase. It should also be noted that the conceptual meaning of CDMS-SA item #9 was principally intended to measure the crossroads phase of self-authorship. With that, the conceptual meaning of data gleaned from CDMS-SA item #9 may need to be reexamined and redefined as it demonstrated failing to measure and support its intended concept and factor in this study.

Because CDMS-SA item #12 loaded into Factors 2 and 3, its conceptual meaning should also undergo reexamination. It appears the error in its ability to measure its intended concept (early self-authoring) lies in the accuracy and clarity of the item itself. CDMS-SA item #12 read, “To make a good choice about a career, it is not a matter of facts or expert judgment, but a match between my values, interests, and skills and those of the job” (Creamer et al., 2010, p. 555). Respondents were interpreting and agreeing with the item in both the crossroads and early self-authoring phases. Perhaps the item was too lengthy or worded in a way that made it ambiguous to participants. Regardless, its conceptual meaning, sentence length and structure, and position in the scale and/or instrument may necessitate reevaluation in future investigations.

Four rules (Hatcher, 1996; Vogt, 2007) were used to determine factor structure of the instrument including, (a) were there at least three CDMS-SA items with loadings on each factor? (b) Did the CDMS-SA items that loaded on a given factor share conceptual meaning, or, intend to measure the same underlying construct? (c) Did CDMS-SA items that loaded on different factors seem to be measuring the different constructs (i.e.

phases)? and, (d) Did the rotated factor pattern demonstrate “simple structure?” Simple structure was considered if most of the CDMS-SA items had relatively high factor loadings on only one factor, and near-zero loadings for the other factors. Additionally, if most factors had relatively high factor loadings for some items, and near-zero loadings for the remaining items.

Using these rules, it was determined that although not in its entirety, the original factor structure of the phases of self-authorship as measured by the CDMS-SA (Creamer et al., 2010), predominantly, were supported by this study. However, exceptions including one item missing from Factor 2 but added to Factor 3 (Item #9) and one item being removed entirely from the instrument’s factor structure (Item #12), the clusters of items within the CDMS-SA (Creamer et al., 2010) intended to measure the phases of self-authorship demonstrate questionable construct validity among this sample of athletic training students.

Therefore, using results from the instrument to draw inferences about this group of athletic training students is not warranted. Moreover, future investigations will necessitate examining ways to manipulate and improve the validity of the instrument across various academic and professional disciplines. While each item within the CDMS-SA has previously been reviewed by self-authorship experts to determine the conceptual meaning and validity of the question (Creamer et al., 2010), additional reviews and analyses are necessary. Survey items that did not support the original factor structure, for example, may need amending to improve their sensitivity and specificity in measuring their intended concepts.

The instrument's reliability. Reliability analysis was used to further answer Research Question #1 as it revealed whether or not items within the CDMS-SA (Creamer et al., 2010) accurately and predictably supported Creamer et al.'s (2010) factor structure of the phases of self-authorship.

As noted previously, the original CDMS-SA factor structures for the phases of self-authorship were not fully supported by the data from this study due to variations in factor loadings among CDMS-SA survey items. Although variations were demonstrated and the validity of the instrument's capacity to measure the phases of self-authorship was questionable, the majority of the CDMS-SA items did fit into the originally purported factor structures of the instrument. Further discerning whether or not the data gleaned from this study is usable, though, the identified items and factor structures must demonstrate reliability. Demonstrating reliability would indicate that if the same individuals completed the CDMS-SA survey again, they would have nearly the same responses.

In this study, specifically, the form of assessing reliability was that of assessing the instrument's internal consistency. In doing so, Cronbach's coefficient alpha was used as the test procedure as it allows one to observe the average intercorrelations of items in a scale (Kimberlin & Winterstein, 2008). The coefficient of reliability for the CDMS-SA instrument measuring the construct of self-authorship, in its entirety, did not meet an acceptable level ($\alpha = .663$). This finding may be manifest of the reliability coefficients for the CDMS-SA items within the three factors (representing the first three phases of self-authorship) also failing to meet acceptable levels (Table 8). Thus, if the average intercorrelations of the items within the scales composing the concept of self-authorship

have low reliability, the overall scale will as well.

Reliability coefficients for the groups of items loaded into external formulas (Factor 1), crossroads (Factor 2), and early self-authoring (Factor 3) were .648, .362, and .500, respectively. With that, they demonstrate unacceptable levels of internal consistency or, reliability, and remain questionable for use in drawing inferences regarding the construct of self-authorship and its phases among this sample of athletic training students.

Even though the originally intended scales (factor structures) were not fully supported in this study, reliability of the originally intended scales of items representing the phases of self-authorship was also analyzed. This was performed as a precautionary measure to illustrate and assure accurate and thorough reliability analyses were conducted. Reliability coefficients for the originally purported scale of items (i.e. those supported by Creamer et al. (2010)) representing external formulas (Factor 1), crossroads (Factor 2), and early self-authoring (Factor 3) were .648, .386, and .484, respectively.

Although reliability coefficients cannot be expected to be identical across data sets, the reliability coefficients found in this study were considerably different than those reported by previous authors. Creamer et al. (2010) reported reliability coefficients for the external formulas, crossroads, and early self-authoring phases of self-authorship to be .580, .620, and .700, respectively. One can observe the reliability of the scale of CDMS-SA items measuring the external formulas phase ($\alpha = .648$) being slightly higher among our sample of respondents compared to Creamer et al. (2010). The reliability of the scales measuring the crossroads ($\alpha = .362/.386$) and early self-authoring phases ($\alpha = .500/.484$), however, were much lower in this study compared to Creamer et al. (2010).

I am uncertain why such differences in reliability were observed. The different reliability coefficients, particularly the lowest ones, are likely reflective of the items within the scales associated with each phase of self-authorship failing to complement each other. Items, then, may necessitate reexamining and rewording. Adding items to the scales, too, may be a way to improve coefficients of internal consistency.

Reliability analysis was also performed in regard to the CDMS-SA's (Creamer et al., 2010) measurement of the dimensions of self-authorship. Thus, the reliability analysis enabled an additional avenue for determining relationship between the survey items and their intended dimensions to be determined.

As reported in the previous chapter, the original CDMS-SA factor structures for the dimensions of self-authorship were not supported by the data from this study due to gross variations in factor loadings among CDMS-SA questionnaire items. As an additional filter to verify whether or not the data gleaned from this study is unusable, though, the identified items and factor structures were analyzed for reliability. In doing so, items' reliability was evaluated in the originally prescribed scales (factor structures) for the dimensions of self-authorship. This was because of the grossly unconvincing factor structures for the dimensions demonstrated among the sample of athletic training students in this study.

Reliability coefficients for the CDMS-SA items within the originally proposed three factors (representing the dimensions of self-authorship) also did not meet acceptable levels and are summarized in Table 9.

Reliability coefficients for the groups of items loaded into epistemological (Factor 1), interpersonal (Factor 2), and intrapersonal (Factor 3) dimensions were .368, .483, and

.469, respectively.

The reliability coefficients found in this study were substantially lower than those reported by previous authors. Creamer et al. (2010) reported reliability coefficients for the epistemological, intrapersonal, and interpersonal dimensions as .595, .713, and .614, respectively. Much like my interpretation of the reliability findings regarding the phases of self-authorship, I am uncertain why such differences in reliability were observed among the dimensions. The low reliability coefficients for the scales measuring the dimensions are likely reflective of the items within the scales failing to complement each other. In other words, the items in these scales are not predictably measuring the same concepts. This might be an error in how the items were interpreted and responded to by this particular sample of subjects. The error may also be reflective of the items necessitating reexamining and rewording. Adding items to the scales may be another way to improve coefficients of internal consistency.

Consideration of subject characteristics. Amidst this discussion of the validity and reliability of the CDMS-SA survey instrument, it is important to acknowledge my findings may be different than those of previous authors because of differences in subject characteristics. In this study, a total of 448 non-certified student members of the NATA participated. The participants were a majority female (62%), White (not of Hispanic origin) (73%), and averaged 22.12 (± 2.9) years of age. I posit these characteristics, though, do not account for much of the differences observed in my findings compared to those of previous authors. First, although the overall response rate was low, the sample size was large ($n=448$) compared to Creamer et al.'s (2010) ($n=183$). Moreover, Creamer et al.'s (2010) subjects were also predominantly White (72.8%) and between the ages of

20 and 23 years old. Where the subjects in this sample differ is the majority were female (62%), while previous authors' sample was majority male (68%) (Creamer et al., 2010).

Differences in validity and reliability findings may, however, be result of how athletic training students interpret and, consequently, respond to the items within the CDMS-SA (Creamer et al., 2010) compared to the information technology (IT) students in a previous study (Creamer et al., 2010). Although it is challenging to confirm, these groups of students may enact different structures and content of thoughts because of unidentified variables related to their given academic disciplines and career choices. In other words, it is possible that there is some variable shared by individuals who would select IT as an academic major and career choice that causes (or is related to) their shared interpretations and responses to the items within the CDMS-SA (Creamer et al., 2010). The same may be true regarding individuals who enrolled in athletic training degree programs. Future investigations may seek to examine variables such as epistemological and ontological paradigms of students and their relationships with CDMS-SA responses. One's view of knowledge and existence may predispose him or her to certain thought structures, contents, and selection of a particular field of study and work.

Summary. In this section, a discussion of the findings surrounding Research Question #1 was presented. Overall, the CDMS-SA items intended to measure the phases and dimensions of self-authorship failed to fit the factor structures (scales) originally developed and purported by Creamer et al. (2010). Moreover, the scales demonstrated questionable levels of internal consistency or, reliability. Therefore, the validity and reliability of the CDMS-SA measuring the conceptual phases, dimensions, and concept of self-authorship among our sample of athletic training students is

questionable. Moreover, using such data to draw inferences regarding the construct of self-authorship among this sample of athletic training students may not be appropriate.

The ensuing section presents a discussion of this study's findings surrounding Research Question #2. Following that, I will move to discussing findings regarding Research Question #3, connect the findings to topics in athletic training, acknowledge limitations of the study, provide recommendations for future research, and offer a conclusion.

Research Question 2

The second research question was to determine the extent to which the three developmental phases (e.g., external formulas, crossroads, and becoming author) of self-authorship were represented among athletic training students. In order to answer this question, descriptive statistics were used to produce Self-Authorship Summary Scores representing a sample of respondents' levels of agreement with the questionnaire items (Creamer et al., 2010).

A summary score of 1-1-3, for example, would indicate a sample of respondents having high agreement with questionnaire items reflecting early self-authoring and low agreement with those reflecting external formulas and crossroads phases. Hence, this group, conceptually, would be considered to have self-authored meaning-making and low reliance on external formulas.

The factor structures for phases and dimensions of self-authorship in this study did not parallel those described by previous authors (Creamer et al., 2010). While the factor structures of the phases were fairly close to those purported by Creamer et al. (2010), factor structures for the dimensions demonstrated gross variations in factor

loadings among CDMS-SA questionnaire items and were not retained.

With that, the summary score computations in this report reflect the factor structure of only the phases and as they were structured in the data gleaned from this study. Summary scores for the dimensions of self-authorship were unable to be calculated because there was no clear factor structure or scales of items from the CDMS-SA to allow for those scales to later be summed and averaged.

In regard to the scale of CDMS-SA items representing the external formulas phase (Factor 1), the mean score was 3.43. The mean score for items representing the crossroads phase (Factor 2) was 3.59 and items representing the early self-authoring phase (Factor 3) had a mean score of 3.37. The overall Self-Authorship Summary Score for the sample of athletic training students who participated in this study was 3.43-3.59-3.37. This finding is quite unique in that it demonstrates the sample of athletic training students having simultaneously high agreement with items in all three phases of self-authorship. Conceptually, this indicates the sample's "level" of self-authorship to be almost equal and high in each phase.

Unfortunately, no previous studies have reported levels of self-authorship among a sample of subjects, so, it is difficult to fully unpack our unusual finding. Reiterating and using the theoretical framework of self-authorship, however, can offer insight regarding the finding.

The construct of self-authorship is supposed to be evolutionary by nature as individuals tend to journey (e.g., progress or regress) through its phases. Baxter Magolda (1992) described four consistently emerging phases in the process—(a) following external formulas, (b) the crossroads, (c) becoming the author of one's life, (d) internal

foundation. Generally, the phases evolve from a reliance on external authority's prescription of knowledge and identity to an internally constructed self-definition.

As such, it seems contradictory that a sample of subjects would have high agreement with items measuring each of the three phases. One would presume individuals, because they are evolving (progressing or regressing) in their meaning-making capacity (i.e., self-authorship), would tend to agree with statements reflective of their current phase. It might be conceived that individuals agree with items representing the external formulas phase and the crossroads phase together, or, the crossroads phase and the early self-authoring phase because the crossroads phase is the bridge between the polar ends of the concept. It seems theoretically uncharacteristic of the self-authorship concept, though, for an individual to agree with items measuring his or her reliance on external formulas and his or her early self-authoring since the two are opposing concepts.

Per the previous section's discussion of the incongruence between the Self-Authorship Summary Score demonstrated by this sample of athletic training students and the theoretical characteristics of self-authorship and its development, I posit there to be undocumented errors causing such results. The etiology of those errors, however, may be in the subjects' interpretations and responses to the items or the items themselves. The scores might, however, point to an unexpected phenomenon related to the level of, specifically, athletic training students' levels of self-authorship. Nonetheless, much like my earlier recommendation following a discussion of Research Question #1, the CDMS-SA instrument (Creamer et al., 2010) necessitates further examination to improve its construct validity and internal consistency.

Items may need to be examined for their accuracy in representing statements reflective of the phases of self-authorship, for example. Likewise, there may be item sequencing changes, inclusion of additional items, or exclusion of current items that may improve the accuracy of the instrument. As such, using the Self-Authorship Summary Score for assessing curricular and co-curricular programming aimed at facilitating self-authorship development, as suggested by previous authors (Creamer et al., 2010), remains open for discussion.

Summary. Although this study was the first to report a Self-Authorship Summary Score among a sample of college students, the summary score indicated subjects of the study agreeing with statements reflective of all three phases of self-authorship. The accuracy of this finding is questionable, as it does not align with the theoretical characteristics of self-authorship and its development. I must acknowledge, though, that additional investigations may reveal similar Self-Authorship Summary Scores among students from various disciplines, including athletic training. Such findings would lead one to believe that while the self-authorship concept is supposed to be evolutionary, individuals may be simultaneously active in (or, in agreement with) all three phases. Although I note the finding as questionable, it should remain as one to be observed as it may provide preliminary information regarding the level of self-authorship among athletic training students and/or the level of accuracy of the CDMS-SA instrument (Creamer et al., 2010).

The ensuing section presents a discussion of this study's findings surrounding Research Question #3. Following that, I will move to connecting the findings of this study with athletic training, discuss the study's limitations, recommendations for future

research, and offer a conclusion.

Research Question 3

Standard multiple regression analyses, with analyses of variance (ANOVA), were conducted to determine how accurately a group of independent variables predicted responses to items within the CDMS-SA representing the phases and dimensions of self-authorship.

Regression analysis was employed as it allows one to determine how accurately the independent variables (age, gender, race, and student risk profile) predict responses on the CDMS-SA instrument (Creamer et al., 2010). Analysis of variance is a statistical analysis allowing mean differences in CDMS-SA (Creamer et al., 2010) scores to be analyzed between and within factors (age, gender, race, and student risk profile). Such analyses helped answer research question three as they determined and illustrate predictive differences in CDMS-SA (Creamer et al., 2010) scores related to, or dependent on, the factors tested in the analysis (age, gender, race, cumulative GPA and athletic training GPA).

In this study, the dependent variables were computed variables representing the scales (factor structures) for the phases and dimensions of self-authorship. In other words, the aim was to analyze whether or not the independent variables predicted scores in the scales of items representing each phase and dimension of self-authorship. The aim was not, however, to determine if the independent variables predicted overall levels of self-authorship. The reason for aiming to predict scores in the individual phases and dimensions instead of the construct as a whole was to attempt to detail and operationalize predictive characteristics of the complex makeup of the self-authorship construct.

Specifically, the factor structures of the phases as they were demonstrated by the data in this study were used to compute dependent variables representing the phases of self-authorship. The factor structures of the dimensions as they were originally intended by Creamer et al. (2010) were used to compute dependent variables representing the dimensions of self-authorship because of gross variations in factor loadings and unsupported factor structures demonstrated by the data gleaned from this study.

Independent variables included in these analyses included age, gender, race, cumulative grade point average (Cumulative GPA), and athletic training grade point average (Athletic Training GPA). The variable represented by cumulative grade point average was used to represent “student risk profile.”

Tolerance statistic. Interpreting the regression analyses began with evaluating the tolerance statistics. The tolerance statistic represents a measure of multicollinearity—or an independent variable’s proportion of variance not explained by its relationship with the other independent variables included in the analysis. Tolerance statistics range between 0 and 1. An independent variable with a tolerance statistic less than .1 is acceptable to be retained in the regression formula and analysis, while independent variables with higher tolerance statistics should be removed from further inclusion and analysis in the regression formula. With that, the tolerance statistic associated with each independent variable is important to evaluate prior to moving on in the analysis because it indicates the appropriateness of utilizing each independent variable in the regression model and analysis.

Tolerance statistics for independent variables including, age, gender, race, cumulative GPA, and athletic training GPA were .957, .965, .988, .344, and .341,

respectively. Such tolerance levels are substantially greater than .1 and indicate none of the independent variables should be tolerated in the regression models for predicting respondents' levels of agreement with the phases and dimensions of self-authorship.

Model summary. The next step in evaluating results of the regression analysis was interpreting the multiple correlation indices to determine the degree to which (or how well) the group of independent variables predict the dependent variable. This was done through examining data within the model summary.

Model summary of the phases. The model summary showed the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) significantly predicting the external formulas phase but only accounting for 5.3% of the variance in the respondents' levels of agreement with items representing the external formulas phase ($R^2 = .053$, $R^2_{\text{adj}} = .040$, $F(5, 361) = 4.046$, $p = .001$). The independent variables (age, gender, race, cumulative GPA, and athletic training GPA) also significantly predicted the crossroads phase but only accounted for 3.0% of the variance in agreement with items representing the crossroads phase ($R^2 = .030$, $R^2_{\text{adj}} = .017$, $F(5, 361) = 2.261$, $p = .048$). The model summary showed the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) failing to significantly predict the early self-authoring phase and only accounting for 2.0% of the variance in respondents' levels of agreement with items representing this phase ($R^2 = .020$, $R^2_{\text{adj}} = .006$, $F(5, 361) = 1.451$, $p = .205$).

Model summary of the dimensions. The model summary shows the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) failing to significantly predict responses to items representing the epistemological dimension and only accounting for 1.6% of the variance in those responses ($R^2 = .016$, $R^2_{\text{adj}} = .003$, $F(5,$

361) = 1.451, $p = .314$). The independent variables (age, gender, race, cumulative GPA, and athletic training GPA) failed to significantly predict the interpersonal dimension and only accounted for 2.6% of the variance in respondents' levels of agreement with these items ($R^2 = .026$, $R^2_{\text{adj}} = .012$, $F(5, 361) = 1.901$, $p = .093$). Independent variables (age, gender, race, cumulative GPA, and athletic training GPA), however, significantly predicted the intrapersonal dimension but only accounted for 5.6% of the variance in responses ($R^2 = .056$, $R^2_{\text{adj}} = .043$, $F(5, 361) = 4.271$, $p = .001$).

As such, one can observe the independent variables significantly predicting participants' levels of agreement to items in the CDMS-SA (Creamer et al., 2010) representing, particularly, the external formulas phase, crossroads phase, and intrapersonal dimension. However, the predictor variables account for very little of the variance in participants' responses. Furthermore, these findings should be interpreted prudently, as the tolerance statistics reported earlier did not support the overall regression model being appropriate.

Analysis of variance. Evaluating the ANOVA table represents the next step in interpreting the regression analysis output. This reports an F -statistic and its corresponding level of significance for each generated regression model. A statistically significant F -statistic indicates linear relationship between the independent variables and the dependent variable in the regression model. Conceptually, this would mean the model (or the group of independent variables) significantly predict the dependent variable. Although the tolerance statistic reported in the earlier section indicated the regression models should not be retained and analyses should cease, the statistics illustrated in this analysis' ANOVA tables are interpreted in the next sections.

F-statistics were statistically significant for regression models using the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) to predict the external formulas phase ($F(5, 361) = 4.046, p = .001$) and crossroads phase ($F(5, 361) = 2.261, p = .048$). The *F*-statistic was not statistically significant for the regression model using the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) to predict the early self-authoring phase ($F(5, 361) = 1.451, p = .205$).

The *F*-statistic was not statistically significant for the regression model using the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) to predict the epistemological dimension ($F(5, 361) = 1.189, p = .314$) and the interpersonal dimension ($F(5, 361) = 1.901, p = .093$). The *F*-statistic was statistically significant, however, for the regression model using the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) to predict the intrapersonal dimension ($F(5, 361) = 4.271, p = .001$).

As such, the analysis of variance (ANOVA) illustrates linearity between the independent variables (age, gender, race, cumulative GPA, and athletic training GPA) and, specifically, the external formulas phase, the crossroads phase, and the intrapersonal dimension. Conceptually, this means that the group of independent variables (age, gender, race, cumulative GPA, and athletic training GPA) does significantly predict those aforementioned phases and dimension. Unfortunately, this also iterates responses to CDMS-SA (Creamer et al., 2010) items representing the early self-authoring phase, epistemological dimension, and the interpersonal dimension are not predicted by the group of independent variables (age, gender, race, cumulative GPA, and athletic training

GPA). It is important to reiterate the because the tolerance statistics reported earlier did not support the overall regression model being appropriate, the findings of the ANOVA should be interpreted with caution.

Interpreting the evidence illuminated by the regression analyses discussed above is not a simple task. There exists little empirical evidence reporting how self-authorship is developed and how such development may be influenced by demographic characteristics such as age, gender, race, cumulative GPA, and athletic training GPA.

To begin, it must be reiterated that developing self-authorship is a complex process. It is initiated and occurs in various forms for each individual. Development of self-authorship, however, does tend to occur in an evolving progression from reliance on externally defined beliefs, affections, identity, and epistemic assumptions to internal definitions of the same.

As there are innumerable journeys one can take toward self-authorship and no all-encompassing model can or should be prescribed, it can be speculated that the journey toward self-authorship varies depending on individual characteristics including but not limited to one's gender, ethnicity, and risk profile. Baxter Magolda's (1992) original research of the self-authorship phenomenon was conducted on White male and female students from one selective, public, regional university in the Midwest. While this is not problematic in and of itself, it threatens the external validity of much of the self-authorship discourse. Pragmatically, having a minimally generalizable understanding of the self-authorship construct presents challenges for educators seeking to predict, promote and assess self-authorship among students from diverse backgrounds.

Age. The current discourse would support self-authorship is unlikely to be achieved before adulthood (Baxter Magolda, 2001b; Kegan, 1994). Adding to the confounding evidence against self-authorship achievement before college or traditional college-aged years are findings from developmental psychology noting adolescents predominantly enact behaviors in effort to fit in with peers (e.g., reliance on external formulas), and lack internally defined affections and actions (Grotevant, Damon, & Eisenberg, 1998; Kiesner, Cadinu, Poulin, & Bucci, 2002). Unfortunately, the findings of this study do not quantitatively answer the question of whether or not self-authorship can be achieved early in adolescence. However, the findings of this study illustrate age as one of the components within the regression model that significantly predicts respondents' levels of agreement with CDMS-SA (Creamer et al., 2010) items representing the external formulas, crossroads, and intrapersonal dimensions. Thus, the current study supports age as a predictor of self-authorship development but this area of understanding continues to necessitate further research to determine how and to what extend different years of age influence self-authorship development.

Gender. Using a mixed methods approach, Creamer and Laughlin (2005) aimed to explain career decision-making processes of women using self-authorship as a theoretical framework. Quantitative survey data was collected from 117 female college students, while 40 female college students were interviewed to glean qualitative data. Approximately 47% of the college women who participated in the study self-identified as racial or ethnic minorities. Quoting Baxter Magolda's (1998) description of self-authorship as, "the ability to collect, interpret, and analyze information and reflect on one's own beliefs in order to form judgements" (p. 143), the authors (Creamer &

Laughlin, 2005) developed an argument of the connectedness between decision making and the complex meaning-making processes associated with self-authorship. As such, the dimensions and phases of self-authorship were used to analyze and describe findings from their research.

Overall, Creamer and Laughlin's (2005) findings demonstrated that self-authorship is a relevant construct informing and influencing the career decision-making process among a sample of traditional college-aged females. Also, findings demonstrated parents to be major influencers for career decisions among the female participants. Although the authors did not intend to label their participants as exhibiting a specific phase of self-authorship, it is important to note that reliance on parents for career discernment illustrates these participants' reliance on an external authority. This is an important finding as individuals (males or females) may be unable to make internally directed decisions to pursue sex-atypical career choices without exhibiting self-authorship. It is, specifically, an important finding in regard to the current study because it provides insight into how and why the external formulas phase was shown to be significantly predicted—using multiple correlation indexes in the model summary and ANOVA—by a regression model that included gender.

In addition to these findings, the authors concluded women viewed parents as more authoritative in their career decision making than academic or career advisors. While this may seem odd to some and appropriate to others, it indirectly illustrates this sample of female college students' inability to negotiate diverse viewpoints—another emblem of immature levels of self-authorship and another reason why we might have observed gender being a variable within a regression model that significantly predicted

agreement with the external formulas phase, crossroads phase, and intrapersonal dimension.

This section has analyzed current literature pertaining to gender-related nuances in self-authorship development. It has, specifically, demonstrated the journey toward self-authorship having variation for female students in relation to their career decision making processes. The findings of Creamer and Laughlin's (2005) work reveals the importance for educational practitioners and researchers focusing efforts on creating environments to facilitate and support self-authorship among women. Not only may doing so foster self-authorship development among female students, it may serve as a meaningful, systemic means of facilitating advancement of women in sex-atypical fields such as science, technology, engineering, and math.

Race. Much of the current data informing the discourse of self-authorship has been collected on White students (Torres & Hernandez, 2007). It should be noted this is not necessarily problematic. It does, however, challenge the generalizability of the self-authorship discourse to students from diverse backgrounds. Other authors, however, employed a constructivist approach and grounded theory methodology to study the influence of cognitive development on ethnic identity development in a sample of Latina/o college students (Torres & Baxter Magolda, 2004). Findings from these authors' work demonstrated intimate relationships between the students' cognitive, intrapersonal, and interpersonal dimensions of development (Torres & Baxter Magolda, 2004).

Participants in Torres and Baxter Magolda's (2004) study, much like the typical continuum of phase development of self-authorship, began their college experiences relying on external authorities to inform their intrapersonal, interpersonal, and cognitive

dimensions. However, and specific to this sample of Latina/o students' intrapersonal development, it was demonstrated that these students were internalizing or actively coping with externally prescribed stereotypes of Latina/os. One participant noted her lack of belief in her ability to succeed in college because of her accent and level of English proficiency. Another student noted her intentionality to behave in ways that ensured others' stereotypes would not apply to her.

This particular finding is worrisome as it demonstrates the harmful effect stereotypes can have on healthy intrapersonal development of students from underrepresented groups. The real and perceived existence of stereotypes threatened these students' intrapersonal development by prescribing externally defined behaviors and affections unto the student. Similarly, stereotypes threatened intra- and interpersonal identity development by provoking enactment of an identity that was an *act* aimed at satisfying others' expectations, rather than enacting self-authored and authentic affections and behaviors. It also demonstrates the importance and necessity for complex meaning-making capacity (i.e., self-authorship) for students who, unfortunately, will have to face undeserved disadvantages in their journeys through school, life, and work.

Other authors (Torres & Hernandez, 2007) have found Latina/o students displaying much of the same nuances of self-authorship development as the students in Baxter Magolda's (1992) original work. However, and similar to what Torres and Baxter Magolda (2004) revealed, Torres and Hernandez (2007) support Latina/o students having "additional developmental tasks that are not included in the study of all White students" (p. 561). Discerning the meaning of societal images of Latina/os as positive or negative (p. 564), overcoming self-consciousness of differentiating characteristics (e.g., a speech

accent) (p. 567), and assimilating to majority-culture while avoiding dismissal of one's familial and cultural identity (p. 568) were examples of additional tasks the Latina/o students had to overcome in their development of self-authorship phases.

Furthermore, previous literature has supported Black students having to face additional tasks in their journeys toward intra- and interpersonal development (Parham, 1989)—similar to such findings of Latina/o students (Torres & Baxter Magolda, 2004; Torres & Hernandez, 2007). Parham (1989) suggests Black students being faced with having to determine how much and in what way(s) to endorse Afrocentric and/or Eurocentric characteristics in their identity. Black students must also work to make meaning of others' perceptions of them as African Americans—adding an additional task in their journey toward intra- and interpersonal maturity (Parham, 1989). From these findings, one can posit there to be innumerable nuances of development in all three dimensions of self-authorship for all students. One might also posit that students from minority groups face additional tasks in their journeys toward mature intrapersonal identities, interpersonal identities, and epistemic assumptions.

The generalizability of the aforementioned studies' (Torres & Baxter Magolda, 2004; Torres & Hernandez, 2007; Parham, 1989) findings has limitations and they do not provide quantitative reports of the influence of race on self-authorship development. However, and pertinent to the purposes of the current study, the findings surrounding the influence of race on self-authorship (Torres & Baxter Magolda, 2004; Torres & Hernandez, 2007; Parham, 1989) provide underlying qualitative understanding of how and why race was a variable within our regression model that significantly predicted the external formulas phase, crossroads phase, and intrapersonal dimension of self-

authorship. Findings from this study and those from previous authors (Torres & Baxter Magolda, 2004; Torres & Hernandez, 2007; Parham, 1989) are also important because they reveal where educators and researchers might focus efforts when attempting to create environments that stimulate and harbor self-authorship development among students from diverse backgrounds.

Current literature pertaining to ethnicity-related differences in self-authorship development has been analyzed in this section. It has, specifically, demonstrated the journey toward self-authorship having variation for Latina/o, White, and Black students. Although all students display congruency in some self-authorship characteristics, Latina/o and Black students tend to have additional developmental tasks to overcome as they journey toward self-authorship.

While still unclear in the literature and from the findings of this study, the additional tasks of Latina/o and African American students are posited to be result of and influenced by these students' identities, cultures, and experiences (Torres & Baxter Magolda, 2004; Torres & Hernandez, 2007; Parham, 1989). Such findings are important as they reveal the necessity for more research to be directed toward ethnicity-related differences in self-authorship—especially research oriented toward students from various other ethnic backgrounds. This section has also revealed the necessity for institutions to examine their environments for attributes that facilitate and/or inhibit self-authorship development among students from all backgrounds, including diverse and underrepresented groups. Institutions should, however, proceed with such actions cautiously as there are inevitably intra- and inter-student and intra- and inter-institutional nuances which influence the development of self-authorship.

Student risk-profile. High-risk students are those with academic backgrounds, prior performances, or personal characteristics which may contribute to inadequate academic performance and/or withdrawal from college (Choy, 2002; Pizzolato, 2003). Although these are each accepted as factors leading to a student being “high risk,” “high risk” in this study was operationalized in regard to students’ cumulative and athletic training major GPAs. A “high risk” student, for the purposes of this study, was one who earned a cumulative or athletic training major GPA of 2.00 on a 4.00 scale. It is important to note, though, that the mean cumulative GPA and athletic training GPA were 3.51 and 3.60, respectively. As such, there were no students in the sample who were considered “high risk.”

Nonetheless, although high risk students may enter the college arena with comparable commitment and aspirations as their lower-risk counterparts, they have more potential constraints to achieving in the academy (Pizzolato, 2003). It is this high-risk population of students which is the focus of the ensuing section regarding self-authorship development.

High-risk students may begin their journeys toward self-authorship before entering college (Pizzolato, 2003). This notion is in contrast to what current discourse would support regarding self-authorship, as it is thought self-authorship is unlikely to mature before adulthood (Baxter Magolda, 2001b; Kegan, 1994). Adding to the confounding evidence against students self-authoring before college are findings from developmental psychology noting adolescents predominantly enacting behaviors in effort to fit in with peers (e.g., reliance on external formulas), instead of practicing internally defined affections and actions (Grotevant, Damon, & Eisenberg, 1998; Kiesner, Cadinu,

Poulin, & Bucci, 2002). However, in communities where, sadly, academic excellence and college readiness are rare, an anomaly of students may internalize such achievements as crossroads, causing them to be provoked into beginning stages of self-authoring their desires and future selves (Manaster, Chan, & Safady, 1992; Milner, 2002).

These high-risk students' development of self-authorship and resultant journey toward college aspirations may not be received well in their particular locale. For example, it has been noted that Black students desiring to attend college may experience ridicule and marginalization for "acting White" (Milner, 2002). Thus, in some high-risk students, the simple act of desiring college attendance becomes the turning point where they necessitate developing internal formulas (Grotevant, Damon, & Eisenberg, 1998; Kiesner, Cadinu, Poulin, & Bucci, 2002) and liberating themselves from the external formulas surrounding them in their home and/or communities (Pizzolato, 2003). This not only demonstrates pre-collegiate self-authorship development, it reveals additional tasks students characterized as "high-risk" may face in their journey toward self-authorship.

Pizzolato (2003) investigated self-authorship among high-risk students (n=35) and confirmed the aforementioned notions that these students in fact demonstrated, although at varying levels, self-authorship prior college. Following external formulas led some of the participants to *disequilibrium*. For example, experiencing violent crimes, being arrested, and observing peers become pregnant were self-authorship provoking experiences that led participants to disequilibrium and consideration of more internally defined aspirations for themselves.

Participants varied in their levels of achieved internal foundations—this was dependent on their level of college admissions privilege (Pizzolato, 2003). Here, college

admissions privilege refers to having high privilege (e.g., not having to figure out how to apply for or fund college) and low privilege (e.g., having to navigate the application to and funding of college). Students who, for example, were awarded athletic scholarships demonstrated lower levels of internal foundations prior to entering college. This was due to the process of applying for and being inducted into college being handled, predominantly, by someone other than the student (i.e., a coach, athletic director, etc.). Reliance on external authorities to carry out the logistics of “going to college” failed to stimulate construction of internal foundations for these high-privilege, high-risk students, although they would progress toward and through that phase of self-authorship later in their collegiate experiences. One can imagine, then, students with low college admissions privilege demonstrated pre-college development of internal foundations. This maturity was provoked by there being no readily accessible external formula for them to rely throughout the college application, decision, and induction process.

How does any of this information regarding student risk profile and self-authorship have to do with the discussion in this manuscript? The findings of Pizzolato’s (2003) work reveal the effect of variables including high-risk characterization, life disequilibrium, and college admissions privilege on self-authorship. The journey toward self-authorship necessitates more than a cognitive willingness and aptitude to think for one’s self. It requires provocation from life experiences, where a lack of privilege may serve as a mediator. Despite having limitations, Pizzolato’s (2003) work iterates the importance for educators, researchers, and institutions further examining self-authorship experiences and levels of students.

Of particular interest for the current study, Pizzolato's (2003) findings provide underlying, qualitative support and reasoning of why the quantitative results of this study showed grade point averages—serving as proxy indicators of student risk profile—significantly predicting respondents' levels of agreement with CDMS-SA (Creamer et al., 2010) items representing the external formulas phase, crossroads phase, and interpersonal dimension.

Furthermore, the findings of Pizzolato (2003) and the current study reveal the qualitative and quantitative importance of best practices being aimed toward enabling high-risk students' transition to college and journeying toward self-authorship. Such practices may not only promote self-authorship development among high-risk student populations, they may aid academic achievement and persistence of this population as well.

To summarize, combining the qualitative findings of self-authorship among students of different races, genders and risk-profiles with the quantitative findings from this study's regression analyses brings self-authorship closer to a more comprehensive understanding of the concept. Our findings demonstrate age, gender, race, cumulative GPA, and athletic training GPA to be significant predictors of individuals' levels of agreement with CDMS-SA (Creamer et al., 2010) items representing the external formulas phase, crossroads phase, and intrapersonal dimension. While the findings do not show significant predictability of the remaining phases and dimensions of self-authorship, their information remains important and pertinent to advancing our understanding of the self-authorship phenomenon.

Summary. As the previous section worked to discuss findings of this study in relation to literature and theoretical assumptions surrounding the concept and assessment of self-authorship, the following section discusses the significance and relevancy of this study's findings to athletic training. The section will then move to a discussion of this study's limitations and provide recommendations for future research in the area of study.

Self-Authorship in Athletic Training

Self-authorship is a developmental achievement signifying one's ability to internally define his or her beliefs, affections, identity, and epistemic assumptions (Baxter Magolda, 1992). This concept becomes relevant and significant in athletic training when one considers athletic training students who have successfully progressed in their journeys toward self-authorship becoming most able to integrate classroom knowledge, skills, and clinical abilities. The self-authored athletic training student and practitioner are those who effectively enact mature, internally defined clinical discernment and professional behaviors required of the profession in order to deliver the highest order of humanistic healthcare. The following section illustrates the applicability of self-authorship in framing and addressing specific issues in the athletic training workforce and educational settings.

Systemic Approach to Issues in the Field

The concept of self-authorship can serve as a framework to understand and inform certain issues in the field of athletic training. One issue in the field is that of *turnover*. Findings from previous authors, for example, reveal saturation of the athletic training workforce with early career professionals who will tend to leave the profession in the ensuing decades of life (Kahanov & Eberman, 2011). Declines in the athletic training

labor force generally occur for males and females in their late 20s and early 30s. Female presence in the workforce, particularly, declines between ages 28 and 35 years old, while, male presence declines after early 40s. Thus, it is this phenomenon of turnover that is occurring in the athletic training workforce and can be better understood and mitigated using self-authorship oriented research and practices.

Retention, or avoidance of student turnover, in professional athletic training degree programs has been of concern as well (Bowman & Dodge, 2011; Dodge, Mitchell, & Mensch, 2009; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012). Retaining students in any degree program, including athletic training programs, serves as a proxy indicator of the quality of programs and students' experiences. In fact, as turnover is a concern in athletic training workforce and educational settings, it has become a topic of examination among prominent voices in the field (Bowman & Dodge, 2011; Dodge, Mitchell, & Mensch, 2009; Goodman et al., 2010; Mazerolle, Gavin, Pitney, Casa, & Burton, 2012).

It is supported that development of a professional identity is a major contributing factor to students' intention and commitment to their academic program and the profession following graduation (Bowman & Dodge, 2011). Students' development of professional identities occurs through engaging, meaningful, reasonably time-consuming, and integrative clinical education experiences—thus, these same factors facilitate their commitment to academic and professional roles (Bowman & Dodge, 2011; Dodge, Mitchell, & Mensch, 2009). Therefore, because self-authorship so intimately involves the student's (and later the professional's) construction and enactment of intra- and interpersonal identities, it can be viewed as an intended developmental and programmatic outcome of athletic training students and degree programs. Further, if self-authorship is

achieved, student's and professional's levels of intention toward and commitment to the profession may be enhanced—thereby mitigating turnover.

Low levels of commitment may also influence and/or be influenced by feelings of burnout, which has its own additional and negative consequences. Burned out practitioners who are emotionally exhausted, calloused toward patients, and have little sense of personal accomplishment (Leiter & Maslach, 1988; Maslach & Jackson, 1984; Maslach, Jackson, & Leiter, 1986; Maslach & Jackson, 1981) may not be capable of delivering optimal care to the whole-patient. Thus, athletic training might benefit from advanced understanding of self-authorship as it can inform systemic commitment-enhancing approaches to education and practice. Such knowledge and practices can contribute to reducing burned out and uncommitted professionals' delivery of insufficient patient-care.

With economic and humanitarian interests in mind, athletic training necessitates investigating ways to facilitate affective development of professional commitment among students and practitioners—this is where facilitating development of self-authorship among athletic training students can, again, systemically enhance professional commitment among new entrants to the field.

In addition to addressing specific issues in the field, it is important to reveal how focusing research efforts toward enhancing self-authorship advances educational priorities to create progress in the field of athletic training.

In its charge to colleges and universities to prepare students for integrative and applicable learning, the Association of American Colleges & Universities (AAC&U) supports the virtues and employment of liberal education. The AAC&U supports that

through liberal education, students develop understanding of and abilities to manage “complexity, diversity, and change” (AAC&U, 2015, p. 1). In addition to gaining the cognitive and psychomotor skills of a specific discipline, liberal education can aid students in their development of transferable skills—communication, evidence-based reasoning, problem solving, and application of skills in real-world contexts (Association of American Colleges & Universities, 2015). These skills, traits, and virtues are quite similar to those embodied by learners who have developed self-authorship. In particular, such developmental achievements also underlie the science and art of practicing healthcare, including athletic training.

Similar educational goals have been echoed by prominent voices in athletic training. In his keynote presentation at the 2015 Athletic Training Educator’s Conference, Dr. Dave Perrin urged athletic training educators to seek integrative, high-impact educational practices to prepare future athletic trainers. He iterated the AAC&U’s findings that employers value critical thinking, communication, problem-solving, and innovation skills among potential new hires. He further speculated employers of athletic trainers share in such feelings (Association of American Colleges & Universities, 2015; Perrin, 2015).

In addition to Dr. Perrin’s address, evidence of the importance and relevancy for research directed toward advancing athletic training education come from the National Athletic Trainers’ Association Executive Committee for Education (ECE). The ECE has communicated several priorities for athletic training education and educational research where Priority 1 (enhance professional education) and Priority 2 (enhance transition to practice) provide schemas about which research directed toward self-authorship can be

situated.

It should be acknowledged athletic trainers are responsible for providing care to whole-patients, not just broken bodies. Moreover, athletic trainers are as human as they are technician—thus, it is beneficial for the field to continue working toward optimally preparing students for the humanistic and technical competencies necessary to provide optimal patient-care. Assessing and documenting our students' and professionals' achievement of developmental outcomes demonstrative of their capacity to communicate, use evidence-based reasoning, solve ambiguous problems, appreciate difference, and apply psychomotor skills in real-world contexts (Association of American Colleges & Universities, 2015) will also be important in our continued efforts of communicating the value of an athletic trainer in the healthcare marketplace.

As such, because the field's body of knowledge lacks interpretation, assessment, and documentation of student development through the lens of self-authorship, there exists a critical need for expanding understanding, promotion, and assessment of self-authorship.

The current study, in an effort to establish validity and reliability of an instrument to measure self-authorship among athletic training students, demonstrated questionable construct validity and low to moderate levels of reliability. Although having such findings, this work remains relevant and informative for the body of educational research in athletic training. This study, for example, was the first to make known the concept and applicability of self-authorship in athletic training. It also provided preliminary evidence of our ability to quantitatively measure self-authorship among a sample of athletic training students. The CDMS-SA (Creamer et al., 2010) did not optimally detect self-

authorship among our sample of athletic training students but has successfully done so in previous studies of other student groups (Creamer et al., 2010).

With that, the current study should be considered a call for continued research to refine the CDMS-SA instrument to improve its ability to detect self-authorship in athletic training students. Revisions and future investigations might include amending the wording and/or sequencing of items within the CDMS-SA instrument. Items might also necessitate alterations in content to align their content validity within the context of athletic training.

Continuing the research conducted in this study may also provide data which can inform educators' capacities to document levels of self-authorship among students, implement self-authorship enhancing pedagogy, and assess students for achievement of such outcomes. Having such knowledge and practices in athletic training programs, as discussed in the previous section, may improve development of students' professional identities, commitment and acquisition of transferable skills—each of which may enhance professional education, transition to practice, and optimize patient-care.

To summarize, although establishing questionable validity and a low to moderately reliable way to measure self-authorship in athletic training, this study is foundational in initiating the field's knowledge and pursuit of investigating the concept as a framework for research, education, and practice. The relevance and significance of self-authorship in athletic training has been discussed and the conversation to work toward developing and assessing self-authorship among athletic training students has been initiated by this investigation.

Limitations

Research conducted using survey designs has the capacity to record and quantify data from large samples of subjects. Presumably then, this capacity can enhance the generalizability of information gleaned from survey research (Creswell, 2013; Vogt, 2007). Like all research, however, survey designs are not without limitations. The ensuing section will discuss several limitations present in this study.

The foremost limitation in this study was the overall response rate. An overall response rate of 8.29% meant more than 90% of individuals in the population of non-certified student members of the NATA did not participate in this study. As such, response bias, in the form of innumerable predispositions, may have influenced the study's results. In other words, participants may have decided to or to not participate in the study because of cognitive biases for or against participating in research. Response bias might have also been manifest in participants' responses to survey items, as those too, are influenced by the predispositions of participants. Regardless, I must acknowledge this limitation and note the results should not be generalized across the population of athletic training students or other populations.

An additional limitation of this study stems from an assumption regarding the operationalization of self-authorship. It is assumed its complex, interwoven phases and dimensions can be quantitatively recorded and made into distinct quantitative scales (Creamer et al., 2010). Doing so, however, must be acknowledged to have inherent limitations.

For example, because the phases, dimensions, and constructive-developmental nuances of self-authorship are not linear in sequence, individuals can demonstrate having

the same thought content but arrive to that content using different structures (Baxter Magolda & King, 2012). So, a questionnaire item on a survey may be answered by respondents in the same way but fail to reveal the respondents' thought processes, or structures. The survey item then, if interpreted alone, only reveals *what* a respondent thinks and not *how* he or she thinks. Thus, attempting to capture these nuances in a “snap shot” from a survey instrument and quantitatively separate them into interval categories challenges the internal validity of the study.

Nonetheless, such threats and limitations are acknowledged, and it is assumed a quantitative instrument can appropriately be used to provide at least a portion of evidence of individuals' journey toward self-authorship. Moreover, the instrument's items, when interpreted in relation to each other, provide evidence of the respondent's tendencies of thought structure. This is due to the items being designed to collectively correspond with and reveal one's thought process—which can be psychometrically related to typical thought structures inherent in the different phases of self-authorship. Nonetheless, the limitation of this study's underlying assumption that self-authorship can be operationalized is acknowledged.

An additional limitation is a form of Hawthorne Effect (Dickenson & Roethlisberger, 2004; Mayo, 2003). Participants, after reading the recruitment email message and instructions for the survey, may have gained an understanding of what I was looking to observe in the study. As such, having understood they were being “studied” for particular reasons may have caused participants to respond to items differently than they would having no understanding of what was, conceptually, being studied. To limit this threat, only a brief explanation of the study's purpose and instrument's purpose was

revealed to participants in the recruitment communications and survey instructions.

Other limitations included the location where participants completed the survey. Individuals may respond to survey items differently if the surveys are completed in places that may affect responses. For example, completing the survey in a public space amongst other individuals taking the same survey may influence one's response to items. This threat was combated in this study's research design because the survey instrument was web-based and could be completed when and where the participant desired.

It should be acknowledged, too, that instrument decay may have taken place (Matthews & Kostelis, 2011). In this sense, participants may have become tired, disengaged, or felt rushed with the survey instrument at a given point. This may have influenced their responses to items and commitment to completing the entire survey. This threat was controlled through the brevity of the survey instrument and an estimated time-to-complete of ten to fifteen minutes. Participants, however, did not have to complete the survey within that time frame—they, in fact, were able to save their work in the web-based survey and return to it at another time.

These limitations including instrument accuracy, selection bias, Hawthorne Effect, location, and instrument decay were considered limitations as they were, to some extent, outside of the researchers' control. While I acknowledge them as being outside of my control, I remained diligent in efforts to control such limitations as noted in the aforementioned paragraphs.

The previous section has acknowledged this study's limitations. The section also discussed ways such limitations were controlled. It must be acknowledged and reiterated that there are limitations of attempting to quantitatively measure self-authorship. It is

important to also note that the advanced, constructive-developmental processing of self-authorship and the necessity to be able to measure it is not a simple task for any research design. Rather, constructive-developmental meaning-making is complex and multifaceted as it becomes the tool by which an individual relies on while journeying toward self-authorship and working through the demands of school and life. Consequently, educational researchers and practitioners must continue directing research in this area and continually becoming informed of ways to better understand, promote, and assess students for self-authorship. Such recommendations for future research will be discussed in the following section.

Recommendations for Future Research

Findings from this study revealed questionable validity and reliability of the CDMS-SA's ability to assess self-authorship among a sample of athletic training students. With that, further investigations are necessary to refine the instrument, its items, and examine various participant populations' interpretations and responses to CDMS-SA items.

This study focused on determining congruency between the item scales measuring the phases, dimensions, and construct of self-authorship with those purported by previous authors' (Creamer et al., 2010). The purpose was to examine such congruency among a unique student population, athletic training students. As such, future investigations should aim to determine the validity and reliability of the CDMS-SA (Creamer et al., 2010) among other student populations.

Moreover, items of the CDMS-SA (Creamer et al., 2010) should continue to be examined for their accuracy in representing statements reflective of the phases and

dimensions of self-authorship. As this study did not intend to thoroughly examine items and develop the/an instrument, future investigations examining the sentence structure and length, inclusion of various items, exclusion of various items, and sequencing of items within the CDMS-SA (Creamer et al., 2010) would be beneficial as changes in wording, sequencing, inclusion or exclusion of current items may improve the instrument's accuracy.

Because the instrument demonstrated questionable validity and reliability in this study, using the Self-Authorship Summary Score for assessing curricular and co-curricular programming aimed at facilitating self-authorship development, as suggested by previous authors (Creamer et al., 2010), remains open for discussion.

Therefore, as future investigations refine and report appropriate validity and reliability of the instrument, investigations could seek to examine variables such as epistemological and ontological paradigms of students and their relationships with CDMS-SA responses. One's view of knowledge and existence may predispose him or her to certain thought structures, contents, and selection of a particular field of study and work. Understanding relationships between respondents' predispositions and their responses to survey items could improve development, use, and interpretation of future versions of the instrument and findings.

Though some work has been done in this study and a previous one (Creamer et al., 2010) to conceptualize the Self-Authorship Summary Score, further work is necessary to understand levels of congruency between the Self-Authorship Summary Score and the theoretical characteristics of self-authorship. Future investigations, then, should focus on conceptualizing and documenting such data on various populations. The etiology of

those errors, however, may be in the subjects' interpretations and responses to the items or the items themselves. The scores might, however, point to an unexpected phenomenon related to the level of, specifically, athletic training students' levels of self-authorship.

Continued work to better understand and measure self-authorship could establish a valid and reliable way for researchers and practitioners to efficiently assess the concept among subjects and students. In doing so, practices such as using the Self-Authorship Summary Score for assessing curricular and co-curricular programming aimed at facilitating self-authorship development, as suggested by previous authors (Creamer et al., 2010), could enhance achievement of developmental outcomes for learners in innumerable educational environments.

Conclusion

The purpose of this study was to advance the theoretical and practical understanding of self-authorship in athletic training education and empirically determine the extent to which a sample of athletic training students had progressed through the developmental phases of self-authorship. A quantitative, non-experimental survey design was employed to provide a numeric description of the development of self-authorship among a sample of athletic training students. Moreover, the measure of self-authorship described by Creamer et al. (2010), referred to as the Career Decision Making Survey-Self Authorship (CDMS-SA), served as the instrument used for this study. Finally, data from the CDMS-SA (Creamer et al., 2010) instrument was analyzed using several quantitative statistical analyses including factor analysis, reliability analysis, descriptive statistics, regression and analysis of variance.

Findings showed questionable construct validity and undesirable levels of internal consistency (reliability) when attempting to assess self-authorship and its phases and dimensions among a sample of students enrolled in professional athletic training degree programs. Data revealed incongruence between the originally purported factor structures, or scales of items within the CDMS-SA (Creamer et al., 2010) instrument and those demonstrated by the sample of subjects in this study.

The findings also revealed an overall Self-Authorship Summary Score for the sample of athletic training students who participated in this study to be 3.43-3.59-3.37. Moreover, due to high measures of multicollinearity, independent variables including, age, gender, race, cumulative GPA, and athletic training GPA should not formally be retained and utilized in a regression model for predicting respondents' levels of agreement with the phases and dimensions of self-authorship. Future research should continue to work toward better understanding and measuring self-authorship. Advancement in these areas could refine and establish a valid and reliable way for researchers and practitioners to assess self-authorship among subjects and students.

In doing so, practices such as using the Self-Authorship Summary Score for assessing curricular and co-curricular programming aimed at facilitating self-authorship development, as suggested by previous authors (Creamer et al., 2010), could enhance achievement of developmental outcomes for learners in innumerable educational environments.

REFERENCES

- Abes, E. S., Jones, S. R., & McEwen, M. K. (2007). Reconceptualizing the model of multiple dimensions of identity: The role of meaning-making capacity in the construction of multiple identities. *Journal of College Student Development*, 48(1), 1-22.
- ACT. (2014). *National collegiate retention and persistence to degree rates*. Retrieved from http://www.act.org/research/policymakers/pdf/retain_2014.pdf
- Amato, H., Konin, J., & Brader, H. (2002). A model for learning over time: The big picture. *Journal of Athletic Training*, 37(4 Suppl), S236-S240.
- Association of American Colleges & Universities. (2015). *The LEAP challenge: Education for a world of unscripted problems*.
- Athletic Training Strategic Alliance. (2015). *Strategic alliance degree statement*. National Athletic Training Association.
- Baxter Magolda, M. (1992). *Knowing and reasoning in college: Gender-related patterns in students' intellectual development*. San Francisco, CA: Jossey-Bass.
- Baxter Magolda, M. (1999). *Creating contexts for learning and self-authorship: Constructive-developmental pedagogy*. Vanderbilt, TN: Vanderbilt University Press.
- Baxter Magolda, M. (2001a). A constructivist revision of the measure of epistemological reflection. *Journal of College Student Development*, 42(6), 520-534.
- Baxter Magolda, M. (2001b). *Making their own way: Narratives for transforming higher education to promote self-development*. Sterling, VA: Stylus Publishing, LLC.
- Baxter Magolda, M. (2009). *Authoring your life: Developing an internal voice to navigate life's challenges*. Sterling, VA: Stylus Publishing, LLC.
- Baxter Magolda, M., & King, P. M. (2004). *Learning partnerships: Theory and models of practice to educate for self-authorship*. Sterling, VA: Stylus Publishing, LLC.
- Baxter Magolda, M., & King, P. M. (2007). Interview strategies for assessing self-authorship: Constructing conversations to assess meaning making. *Journal of College Student Development*, 48(5), 491-508.

- Baxter Magolda, M., & King, P. M. (2012). Assessing meaning making and self-authorship: Theory, research, and application. *ASHE Higher Education Report*, 38(3).
- Baxter Magolda, M., & Porterfield, W. D. (1985). A new approach to assess intellectual development on the Perry scheme. *Journal of College Student Personnel*, 26(4), 343-350.
- Black, L. L., Jensen, G. M., Mostrom, E., Perkins, J., Ritzline, P. D., Hayward, L., & Blackmer, B. (2010). The first year of practice: An investigation of the professional learning and development of promising novice physical therapists. *Physical Therapy*, 90(12), 1758-1773.
- Board of Certification. (2010). *Role delineation study/practice analysis 6th edition*. Board of Certification, Inc.
- Bowman, T., & Dodge, T. (2011). Factors of persistence among graduates of athletic training education programs. *Journal of Athletic Training*, 46(6), 665-71.
- Chickering, A., & Reisser, L. (1993). The seven vectors: An overview. *Education and Identity*, 43-52.
- Choy, S. (2002). *Access and persistence: Findings from 10 years of longitudinal studies of students*. Washington, DC: American Council on Education Center for Policy Analysis.
- Commission on Accreditation of Athletic Training Education. (2012). *Standards for the accreditation of professional athletic training programs*. Austin, TX: Commission on Accreditation of Athletic Training Education.
- Commission on Accreditation of Athletic Training Education. (2014). Three levels of accreditation. Retrieved from <http://caate.net/three-levels-of-accreditation/>
- Creamer, E. G., & Laughlin, A. (2005). Self-authorship and women's career decision making. *Journal of College Student Development*, 46(1), 13-27.
- Creamer, E. G., Baxter Magolda, M., & Yue, J. (2010). Preliminary evidence of the reliability and validity of a quantitative measure of self-authorship. *Journal of College Student Development*, 51(5), 550-562.
- Creswell, J. (2013). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage.
- Daloz, L., Keen, C., Keen, J., & Parks, S. (1996). *Leading lives of commitment in a complex world*. Boston, MA: Beacon Press.

- Del Rossi, G. (2015, April). NATA's executive committee for education: Charting a path for AT education. *NATA News*, 16-17.
- Delforge, G. (1999). The history and evolution of athletic training education in the United States. *Journal of Athletic Training*, 34(1), 53.
- Dewey, J. (1938). *Experience and education*. New York, NY: Macmillan.
- Dickson, W. J., Roethlisberger, F. J. (2004). *Management and the worker*. New York, NY: Routledge.
- Dinmohammadi, M., Peyrovi, H., & Mehrdad, N. (2013). Concept analysis of professional socialization in nursing. *Nursing Forum*, 48(1), 26-34.
- Dodge, T., Mitchell, M., & Mensch, J. (2009). Student retention in athletic training education programs. *Journal of Athletic Training*, 44(2), 197-207.
- Draper, D. (1989). Students' learning styles compared with their performance on the NATA certification exam. *Athletic Training Journal of the National Athletic Trainers' Association*, 24, 234-235,275.
- Duchscher, J. E. B. (2001). Out in the real world: Newly graduated nurses in acute-care speak out. *The Journal of Nursing Administration*, 31(9), 426.
- Feiman-Nemser, S. (2001). From preparation to practice: Designing a continuum to strengthen and sustain teaching. *The Teachers College Record*, 103(6), 1013-1055.
- Foster, J. (2001). *Data analysis using SPSS for Windows versions 8-10: A beginner's guide*. Thousand Oaks, CA: Sage Publications Inc.
- Giroux, H. A. (1992). *Border crossings: Cultural workers and the politics of education*. New York, NY: Routledge.
- Goodman, A., Mensch, J. M., Jay, M., French, K. E., Mitchell, M. F., & Fritz, S. L. (2010). Retention and attrition factors for female certified athletic trainers in the national collegiate athletic association Division I football bowl subdivision setting. *Journal of Athletic Training*, 45(3), 287-298.
- Grotevant, H., Damon, W., & Eisenberg, N. (1998). *Handbook of child psychology: Vol. 3*. Hoboken, NJ: John Wiley & Sons.
- Hatcher, L. (1994). *A step-by-step approach to using the SAS system for factor analysis and structural equation modeling*. Cary, NC: SAS Institute Inc.

- Harrelson, G. L., Leaver-Dunn, D., & Wright, K. E. (1998). An assessment of learning styles among undergraduate athletic training students. *Journal of Athletic Training*, 33(1), 50-53.
- Harris, M. (1998). *Basic statistics for behavioral science research* (2nd ed.). Needham Heights, MA: Allyn & Bacon.
- Harvard University. (1826). *Annual report of the president of Harvard university to the overseers on the state of the university for the academic year*. Cambridge, MA.: Author.
- Kahanov, L., & Eberman, L. E. (2011). Age, sex, and setting factors and labor force in athletic training. *Journal of Athletic Training*, 46(4), 424-430.
- Kaiser, H. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement*, 20, 141-151.
- Kegan, R. (1982). *The evolving self: Problem and process in human development*. Cambridge, MA: Harvard University Press.
- Kegan, R. (1994). *In over our heads: The mental demands of modern life*. Cambridge, MA: Harvard University Press.
- Kiesner, J., Cadinu, M., Poulin, F., & Bucci, M. (2002). Group identification in early adolescence: Its relation with peer adjustment and its moderator effect on peer influence. *Child Development*, 196-208.
- Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, 65 (23), 2276-2284.
- Klossner, J. (2008). The role of legitimation in the professional socialization of second-year undergraduate athletic training students. *Journal of Athletic Training*, 43(4), 379-385.
- Mayo, E. (2003). *The human problems of an industrial civilization* (6th ed.). New York, NY: Routledge.
- Mazerolle, S. M., Bowman, T. G., & Dodge, T. M. (2014). The professional socialization of the athletic trainer serving as a preceptor. *Journal of Athletic Training*, 49(1), 75-82.
- Mazerolle, S. M. (2014a). Athletic training student socialization part I: Socializing students in undergraduate athletic training programs. *Athletic Training Education Journal*, 9(2), 72.

- Mazerolle, S. M. (2014b). Athletic training student socialization part II: Socializing the professional master's athletic training student. *Athletic Training Education Journal*, 9(2), 80.
- Mazerolle, S. M. (2014c). Considerations for the use of the observation experience to aid in early socialization and retention of athletic training students. *Athletic Training Education Journal*, 9(2), 54.
- Mazerolle, S. M., Bruening, J. E., & Casa, D. J. (2008). Work-family conflict, part I: Antecedents of work-family conflict in national collegiate athletic association division I-A certified athletic trainers. *Journal of Athletic Training*, 43(5), 505-512.
- Mazerolle, S. M., Bruening, J. E., Casa, D. J., & Burton, L. J. (2008). Work-family conflict, part II: Job and life satisfaction in national collegiate athletic association division I-A certified athletic trainers. *Journal of Athletic Training*, 43(5), 513-522.
- Mazerolle, S. M., Gavin, K. E., Pitney, W. A., Casa, D. J., & Burton, L. (2012). Undergraduate athletic training students' influences on career decisions after graduation. *Journal of Athletic Training*, 47(6), 679-693.
- Milner, H. R. (2002). Affective and social issues among high achieving African American students: Recommendations for teachers and teacher education. *Action in Teacher Education*, 24(1), 81-89.
- Muijs, D. (2004). *Doing quantitative research in education with SPSS*. Thousand Oaks, CA: Sage Publications Inc.
- NATA Post-Professional Education Committee. (2015). Composition, purpose, objectives. Retrieved from <http://www.nata.org/PPEC>
- NATA Professional Education Committee. (2011). *Athletic training education competencies 5th edition*. Carrollton, TX: National Athletic Trainers' Association.
- National Athletic Trainers' Association. (1990). AMA endorses athletic training as allied health profession. *NATA News*.
- National Athletic Trainers' Association. (1994). JRC-AT update. *NATA News*.
- National Athletic Trainers' Association. (1996). A report from the education task force. *NATA News*.
- National Athletic Trainers' Association. (2002). *Standards and guidelines for post-certification graduate athletic training education programs*. Carrollton, TX: National Athletic Trainers' Association.

- National Athletic Trainers' Association. (2014a). Athletic training. Retrieved from <http://www.nata.org/athletic-training>
- National Athletic Trainers' Association. (2014b). NATA history. Retrieved from <http://www.nata.org/nata-history>
- National Center for Education Statistics. (2015). *The condition of education: Institutional retention and graduation rates for undergraduate students*. Retrieved from http://nces.ed.gov/programs/coe/indicator_cva.asp
- Newell, W. E. (1984). Reflections on athletic training. *Athletic Training, Journal of the National Athletic Trainers' Association*, 19.
- O'Shea, M. (1982). Origins of athletic training. *Athletic Training the Journal of the National Athletic Trainers' Association*, 17(1).
- Parham, T. A. (1989). Cycles of psychological nigrescence. *The Counseling Psychologist*, 17(2), 187-226.
- Peabody, F. (1927). *The care of the patient*. Journal of American Medical Association.
- Petschauer, M., Levy, L., & Stilger, V. (2014). Dear editor. *NATA News*, 26, 11.
- Pitney, W., Ilsley, P., & Rintala, J. (2002). The professional socialization of certified athletic trainers in the national collegiate athletic association division I context. *Journal of Athletic Training*, 37(1), 63-70.
- Pitney, W. A. (2002). The professional socialization of certified athletic trainers in high school settings: A grounded theory investigation. *Journal of Athletic Training*, 37(3), 286-292.
- Pizzolato, J. E. (2003). Developing self-authorship: Exploring the experiences of high-risk college students. *Journal of College Student Development*, 44(6), 797-812.
- Pizzolato, J. E. (2007). Assessing self-authorship. *New Directions for Teaching and Learning*, 2007(109), 31-42.
- Potteiger, K., Brown, C. D., & Kahanov, L. (2012). Altering the athletic training curriculum: A unique perspective on learning over time. *Athletic Training Education Journal*, 7(2), 60-69.
- Prentice, W. E. (2014). *Principles of athletic training: A competency-based approach* (15th ed.). New York, NY: McGraw Hill.
- Price, S. L. (2009). Becoming a nurse: A meta-study of early professional socialization and career choice in nursing. *Journal of Advanced Nursing*, 65(1), 11-19.

- Rest, J. (1979). Developing in judging moral issues. *Center for the Study of Ethical Development*. Minneapolis, MN: University of Minnesota Press.
- Sanford, N. (1967). *Where colleges fail: A study of the student as a person*. San Francisco, CA: Jossey-Bass.
- Scheckel, M. (2009). Nursing education: Past, present, future. *Issues and Trends in Nursing*, 27-55.
- Stradley, S. L., Buckley, B. D., Kaminski, T. W., Horodyski, M., Fleming, D., & Janelle, C. M. (2002). A nationwide learning-style assessment of undergraduate athletic training students in CAAHEP-accredited athletic training programs. *Journal of Athletic Training*, 37(4 Suppl), S141-S146.
- Taub, D. J., & McEwen, M. K. (1991). The patterns of development of autonomy and mature interpersonal relationships in black and white undergraduate women. *Journal of College Student Development*, 32.
- Thelin, J. R. (2004). *A history of American higher education*. Baltimore, MD: Johns Hopkins University Press.
- Thon, S., & Hansen, P. (2015). Preferred learning styles of professional undergraduate and graduate athletic training students. *Athletic Training Education Journal*, 10(2), 159-163.
- Torres, V. (2010). Investigating Latino ethnic identity within the self-authorship framework. In Baxter Magolda, M., Creamer, E., & Meszaros, P. (Eds.), *Development and assessment of self-authorship: Exploring the concept across cultures* (pp. 67-84). Sterling, VA: Stylus Publishing Inc.
- Torres, V., & Baxter Magolda, M. (2004). Reconstructing Latino identity: The influence of cognitive development on the ethnic identity process of Latino students. *Journal of College Student Development*, 45(3), 333-347.
- Torres, V., & Hernandez, E. (2007). The influence of ethnic identity on self-authorship: A longitudinal study of Latino/a college students. *Journal of College Student Development*, 48(5), 558-573.
- UCLA Statistical Consulting Group. (2016). Introduction to SAS. From <http://www.ats.ucla.edu/stat/sas/notes2/>
- Vogt, W. P. (2007). *Quantitative Research Methods for Professionals*. New York: Pearson.
- Whiton, J. (1901). The first Harvard-Yale regatta (1852). *Outlook*, 68, 286-289.

APPENDIX A

STUDENT RECRUITMENT LETTER/EMAIL

(Initial Email to Students)

Dear Athletic Training Student,

I am a doctoral student under the direction of Dr. Wendy Troxel at Illinois State University (ISU). I invite you to participate in a brief survey regarding your career and academic decision making processes; the study aims to identify the developmental process of *self-authorship* (SA) among athletic training students. It is my hope that the information from this research will provide a better understanding of how athletic training students progress through the complex, developmental phases of *self-authorship*. Findings from this project may help guide future educational and scholarly efforts that facilitate increasingly holistic development of entry-level athletic trainers.

I have obtained approval from the ISU Institutional Review Board to conduct this study. This online survey will take approximately **10-15 minutes** to complete and should be completed by **Monday, February 29, 2016**. The survey is comprised of simple Likert-type questions. When completing the survey, I ask that you answer each question honestly and to the best of your ability. Surveys will be completely anonymous. Risk of loss of confidentiality will be minimized as responses will be handled in an anonymous manner and at no time will an attempt be made to identify specific responses with names or IP addresses. Data will be analyzed and reported using group demographics.

Please feel free to contact Dr. Wendy Troxel (xxxxxxx@xxxxx.xxx) and/or Mr. Jeffrey Williams (xxxxxxx@xxxxx.xxx) with any questions about the research.

Please consider taking the time to fill out the following survey: (insert link)

Your consent will be implied by clicking in the link to begin the survey.

Your participation in this study is completely voluntary. You must be 18 years of age to participate in this study. There are no penalties for choosing not to participate. Further, you may withdraw at any time, for any reason, without penalty.

Sincerely,

Jeffrey Williams, MS, ATC (xxxxxxx@xxxxx.xxx)

Doctoral Candidate

Department of Educational Administration & Foundations

Instructional Assistant Professor

School of Kinesiology & Recreation

Illinois State University

For questions about research participants' rights and/or a research related injury or adverse effects, please contact the Research Ethics & Compliance Office at (xxx) xxx-xxxx and/or rec@ilstu.edu.

APPENDIX B

STUDENT RECRUITMENT LETTER/EMAIL (FOLLOW-UP)

(Follow-up Reminder Email for Students)

Dear Athletic Training Student,

Recently, you were sent an email containing a link to an online survey regarding your career and academic decision making processes. If you are still interested, please take the time to fill out the survey.

This online survey will take approximately **10-15 minutes** to complete and should be completed by **Monday, February 29, 2016**. Surveys will be completely anonymous and no effort will be made to link any information back to you, the only foreseeable risk to participation is a breach of confidentiality.

Participation in this study is completely voluntary, and while there are no direct benefits to you, this can greatly enhance the education of future athletic trainers.

Please consider taking the time to fill out the following survey: (insert link)

Your consent will be implied by clicking in the link to begin the survey.

Sincerely,

Jeffrey Williams, MS, ATC
Doctoral Candidate
Department of Educational Administration & Foundations
Instructional Assistant Professor
School of Kinesiology & Recreation
Illinois State University

APPENDIX C

PROGRAM DIRECTOR RECRUITMENT LETTER/EMAIL

(Initial Email for Program Director)

Dear Program Director,

The construct of self-authorship is a developmental/learning outcome involving a student's transition from amateur meaning-making, which is highly reliant on external formulas, to more complex, internally constructed meaning-making capacity. As one can imagine, such advanced meaning-making capacity is necessary for achievement of the cognitive, psychomotor, and affective competencies of healthcare provision.

The purpose of this investigation is to advance the theoretical and practical understanding of *self-authorship* in athletic training and empirically determine the extent to which a sample of athletic training students have progressed through the developmental phases and dimensions of self-authorship. Such findings will inform pedagogy and curricular practices among athletic training educators to best facilitate development of complex meaning-making capacities (self-authorship) among students.

As such, we invite you to recruit your athletic training students to participate in a brief online survey regarding their career and academic decision making processes. Although the survey items are oriented toward career and academic decision making processes, collectively, they serve as valid measures of the phases and dimensions of the self-authorship construct. This online survey will take approximately **10-15 minutes** for your students to complete and should be completed by **Monday, February 29, 2016**.

Your decision to recruit your students for participation in the study is completely voluntary, but the summary of findings will be reported and can be made available to you for your benefit. Please avoid utilizing any coercive strategies to recruit your students for participation in the study.

If you agree to participate in the study, we ask that you email me, Mr. Jeffrey Williams (xxxxxxx@xxxx.xxx), a list of your student email addresses, so we may send them the link to the online survey. Or, forward the attached recruitment message directly to your students on our behalf.

Please feel free to contact Dr. Wendy Troxel (xxxxxx@xxxx.xxx) and/or Mr. Jeffrey Williams (xxxxxx@xxxx.xxx) with any questions. In addition, for questions about research participants' rights and/or a research related injury or adverse effects, please contact the Research Ethics & Compliance Office at (xxx) xxx-xxxx and/or rec@ilstu.edu.

Sincerely,

Jeffrey Williams, MS, ATC
Doctoral Candidate
Department of Educational Administration and Foundations
Instructional Assistant Professor
School of Kinesiology & Recreation
Illinois State University

APPENDIX D
PROGRAM DIRECTOR RECRUITMENT LETTER/EMAIL
(FOLLOW-UP)

(Follow-up Reminder Email for Program Directors)

Dear Program Director,

Recently, you were sent an email containing a link to an online survey regarding your students' career and academic decision making processes. If you are still interested, please email me a list of your student email addresses, so we may send them the link to the online survey. Or, forward the online survey link and this recruitment message directly to your students on our behalf.

This online survey will take approximately **10-15 minutes** to complete and should be completed by **Monday, February 29, 2016**. Surveys will be completely anonymous and no effort will be made to link any information back to student participants. The only foreseeable risk to participation is a breach of confidentiality.

Participation in this study is completely voluntary, and while there are no direct benefits to you, this can greatly enhance the education of future athletic trainers.

The link to the survey can be found here: (insert link)

Your consent will be implied by clicking in the link to begin the survey.

Sincerely,

Jeffrey Williams, MS, ATC
Doctoral Candidate
Department of Educational Administration & Foundations
Instructional Assistant Professor
School of Kinesiology & Recreation
Illinois State University

APPENDIX E

CAREER DECISION MAKING SURVEY-SELF-AUTHORSHIP

(CDMS-SA) INSTRUMENT (Creamer et al., 2010)

You have been invited to participate in a research study examining the developmental process of self-authorship (SA) among athletic training students. Below are a number of statements about career and academic decision making processes. Please indicate how much you agree or disagree with each by selecting a number corresponding to the following code: 1=disagree; 2=slightly disagree; 3=slightly agree; 4= agree.

SECTION I—DIVERSE VIEWPOINTS AND DECISION MAKING

1. To make a good choice about a career, I think that facts are the strongest basis for a good decision.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

2. To make a good choice about a career, I think that experts are in the best position to advise me about a good choice.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

3. The most important role of an effective career counselor or advisor is to be an expert on a variety of career options.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

4. The most important role of an effective career counselor or advisor is to provide guidance about a choice that is appropriate for me.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

5. My primary role in making an educational decision, like the choice of a major or career, is to acquire as much information as possible.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

6. My primary role in making an educational decision, like the choice of a major or career, is to seek direction from informed experts.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

7. To make a good choice about a career, I think that it is largely a matter of personal opinion.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

8. When people have different interpretations of a book, I think that some books are just that way. It is possible for all interpretations to be correct.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

9. If a teacher or advisor recommended a career in a field that I have never considered before, I would try to explain my point of view.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

10. The most important role of an effective career counselor or advisor is to help students to think through multiple options.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

11. My primary role in making an educational decision, like the choice of a major or career, is to consider my own views.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

12. To make a good choice about a career, I think that it is not a matter of facts or expert judgment, but a match between my values, interests, and skills and those of the job.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

13. When people have different interpretations of a book, I think that multiple interpretations are possible, but some are closer to the truth than others.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

14. Experts are divided on some scientific issues, such as the causes of global warming. In a situation like this, I would have to look at the evidence and come to my own conclusions.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

15. Experts are divided on some scientific issues, such as the causes of global warming. In a situation like this, I think it is best to accept the uncertainty and try to understand the principal arguments behind the different points of view.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

16. If a teacher or advisor recommended a career in a field that I have never considered before, I would try to understand their point of view and figure out an option that would best fit my needs and interests.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

17. In my opinion, the most important role of an effective career counselor or advisor is to direct students to information that will help them to make a decision on their own.

Disagree	Slightly Disagree	Slightly Agree	Agree
1	2	3	4

SECTION II—GENERAL INFORMATION

1. What is your gender?

Female	Male	Unknown Gender
1	2	3

2. What is your age?

3. What type of athletic training program are you enrolled in?

Bachelor's	Entry-Level Master's
1	2

4. What is your academic standing?

First year undergraduate (e.g., freshman)	Sophomore	Junior	Senior	First year – entry level master’s student	Second year – entry level master’s student	Third year – entry level master’s student
1	2	3	4	5	6	7

5. Do you intend to pursue a career in athletic training following graduation from professional athletic training degree program?

Yes	No	Undecided
1	2	3

6. If you are enrolled in an entry-level master’s athletic training program, what was your undergraduate major prior to beginning the entry-level master’s coursework?

Please Type Answer

7. What is the highest level of education completed by your father/male guardian?

Less than High School	High school or equivalent	Associate’s/community college	Bachelor’s degree	Master’s, doctorate, or professional degree (i.e. medical doctor, veterinarian, or lawyer)	Other
1	2	3	4	5	6

8. What is the highest level of education completed by your mother/female guardian?

Less than High School	High school or equivalent	Associate’s/community college	Bachelor’s degree	Master’s, doctorate, or professional degree (i.e. medical doctor, veterinarian, or lawyer)	Other
1	2	3	4	5	6

9. What is your race/ethnicity?

Black, not of Hispanic origin	Asian or Pacific Islander	White, not of Hispanic origin	Hispanic	Multi- ethnic	American Indian or Alaskan	Other
1	2	3	4	5	6	7

10. What is your cumulative grade point average (GPA) using a 4.00 scale?

Please Type Answer

11. What is your grade point average (GPA) in your athletic training courses using a 4.00 scale?

Please Type Answer

12. Are you employed?

Yes, part-time	Yes, full-time	Not employed
1	2	3

13. At what age did you first know you wanted to pursue athletic training?

Please Type Answer

14. Which NATA District are you a member?

District 1	District 2	District 3	District 4	District 5	District 6	District 7	District 8	District 9	District 10
1	2	3	4	5	6	7	8	9	10

APPENDIX F
APPROVAL FOR ACCESS TO BATCH NATA
MEMBER EMAILS

Jeff,

I will wait to hear back from you.

Thank you,



Velma Meza | [REDACTED]
Senior Knowledge Initiatives Coordinator
[REDACTED] | Fax: [REDACTED] | [REDACTED]

From: Williams, Jeffrey [mailto:[REDACTED]]
Sent: Tuesday, November 17, 2015 12:10 PM
To: Velma Meza
Subject: RE: Batch NATA Member Emails

Hi Velma,

Thanks for corresponding through all of this! I'll be in touch soon with our decision regarding the email addresses. In the meantime, I'll bring this information back to my research team for discussion and a decision to be made.

Thanks again and I will talk to you soon!

Jeff

From: Velma Meza [mailto: [REDACTED]]
Sent: Tuesday, November 17, 2015 9:08 AM
To: Williams, Jeffrey < [REDACTED]>
Subject: RE: Batch NATA Member Emails
Importance: High

Jeffrey,

I just heard back from the IT department, there are a total of 7015 non-certified student members that have indicated that they would participate in surveys.
The cost for the list will be \$100 set up fee and 9 cents for each email.
Thank you,



Velma Meza | [REDACTED]
Senior Knowledge Initiatives Coordinator
[REDACTED] | Fax: [REDACTED] | [REDACTED]

From: Williams, Jeffrey [mailto: [REDACTED]]
Sent: Monday, November 16, 2015 12:47 PM
To: Velma Meza
Subject: RE: Batch NATA Member Emails

Good afternoon Velma,

I hope all is well with you. I wanted to follow up and see if you have heard back from the IT department regarding a list of non-certified student email lists and associated cost? Thanks again for your help looking into this matter.

Talk to you soon,

Jeff

From: Williams, Jeffrey
Sent: Thursday, November 05, 2015 11:59 AM
To: 'Velma Meza' < [REDACTED]>
Subject: RE: Batch NATA Member Emails

Great! Thanks for the help. I look forward to hearing back soon.

Jeff

From: Velma Meza [mailto:[REDACTED]]
Sent: Thursday, November 05, 2015 11:39 AM
To: Williams, Jeffrey <[REDACTED]>
Subject: RE: Batch NATA Member Emails

Jeff,

I received your request below. I will submit a request to the IT department for a list of non-certified students and will let you know the number of emails they find and the cost of the list.

Thank you,



Velma Meza | [REDACTED]
Senior Knowledge Initiatives Coordinator
 [REDACTED]

From: Williams, Jeffrey [mailto:[REDACTED]]
Sent: Thursday, November 05, 2015 9:19 AM
To: NATA Member Services
Cc: Troxel, Wendy
Subject: Batch NATA Member Emails

Good morning,

I hope this message finds you well. My name is Jeff Williams and I am an athletic training educator at Illinois State University. I am currently preparing an educational research project in which myself and the research team would like to disseminate a survey to all athletic training students enrolled in professional degree programs.

With that, I am inquiring to find out if the NATA is able and willing to query all *non-certified student* members' information in order to provide our research team with the batch of *non-certified student* member email addresses. Please let me know if this request is a possibility and any associated costs. I have searched the NATA and Foundation's webpages for this information but have had no luck. I may have missed the page where this information is located? As such, please don't hesitate to let me know if there is anything more I can do on my end to help or find the information on the web.

Thanks in advance for your correspondence and help,

Jeff Williams, MS, ATC
 Clinical Education Coordinator
 Athletic Training Education Program
 School of Kinesiology and Recreation
 Illinois State University
 250 McCormick Hall
 Campus Box 5120
 Normal, IL 61790
 [REDACTED]
www.kinrec.ilstu.edu